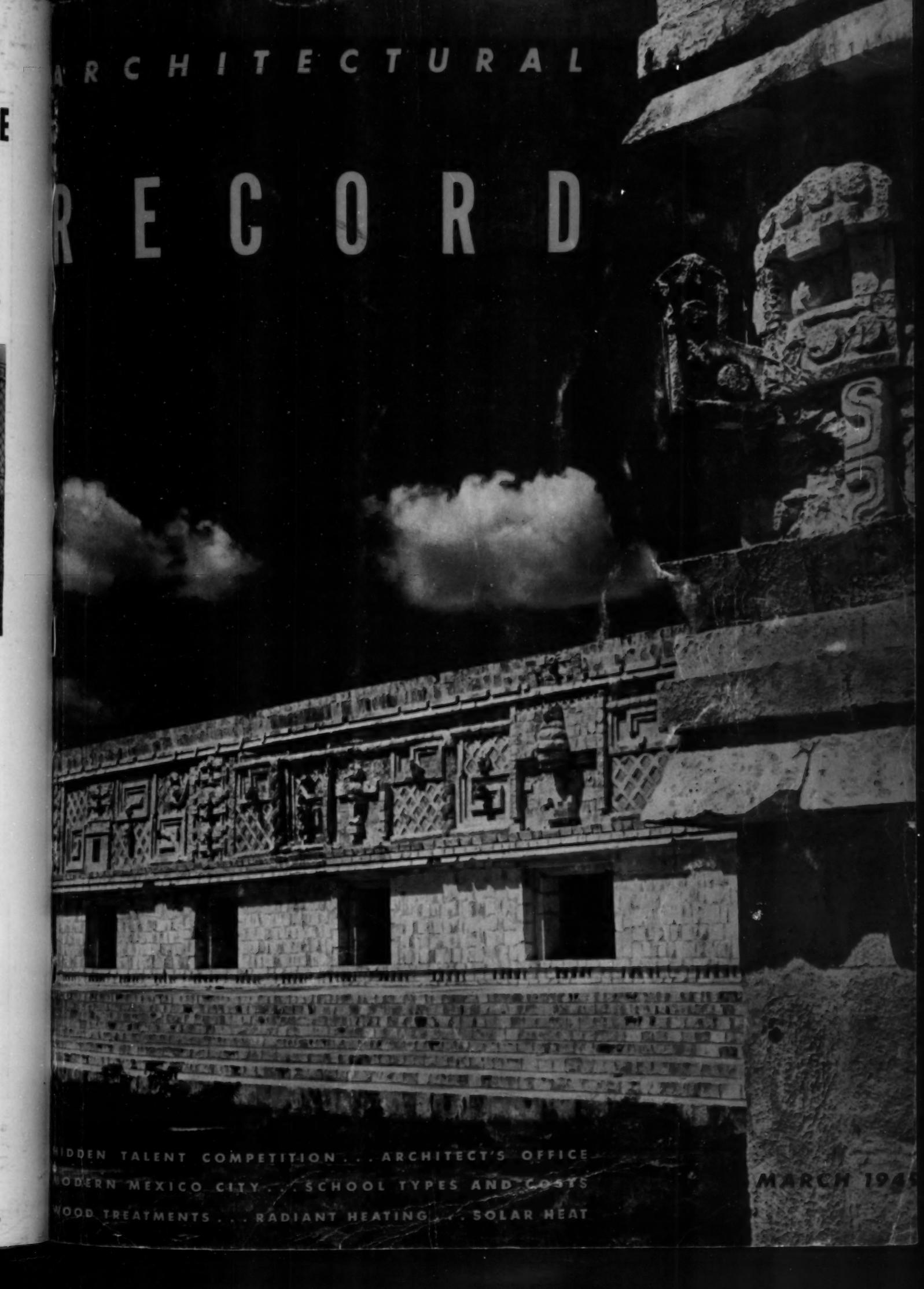
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MARCH 194

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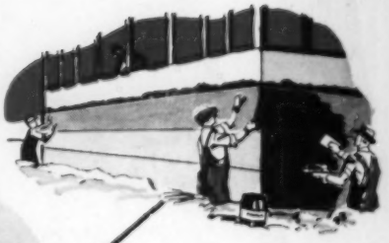

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THE RECORD REPORTS

Party Differences Fade as Congress Tackles Housing Measures • BRAB Executive Committee Announced • Truman Cuts VA Hospital Program

True to predictions, the Administration lost no time in applying the pressure to its own anti-inflation and housing programs once Congress settled down to work in the 81st session. Inauguration seemed to mark the starting date. A week after President Truman took the oath of office Congress had before it half a dozen major housing bills and both of the Banking Committees had approved a seven-months extension of voluntary allocations of scarce materials beyond March 1.

Democratic leaders announced they would try to get through Congress stand-by powers for the President to impose compulsory price, wage and allocation controls — part of the much-heralded anti-inflation pattern. All emphasis seemed to be on stepping up the legislative tempo, and bills having to do with rent controls, housing, export controls and allocations all were caught in this sudden draft of pressure.

(About the same time came the announcement that the Administration was readying a bill to create a Columbia River Authority, seen as further evidence of an all-embracing effort to revamp and "strengthen" laws having to do with construction matters.)

Party Cleavages Closing Up

Observers watched the party cleavages slip away in the first significant test of power in the House; 49 Republicans had voted with the Democrats to liberalize the House Rules Committee, the body that bottled up the housing bill in the 80th Congress. With that obstacle removed, the 81st Congress is generally expected to enact a comprehensive measure aimed at freer government financing guarantees and including the construction of public housing units. Builders favor the former provision, oppose the latter.

Further evidencing an area of inter-party agreement on the broad housing issues, Senator Robert Taft's followers and Administration supporters ignored differences long enough to agree on the fundamental methods of attacking the housing shortage legislatively.

Housing Bills Much Alike

When the bills of both parties had been unmasked, they were found to be remarkably alike in principle, differing essentially in the following points: the number of public housing units to be constructed, amount of capital grant outlays, and tax exemption for local bonds. Other points of difference noted: rate of construction of public housing units, length of program, and amortization period. The Administration and Republican bills approached the problem of home shortages along parallel lines in respect to slum clearance, farm housing, research and changes in Federal Housing Administration operations.

Summed up, both major parties jumped in to foster comprehensive housing measures, the Republicans making a somewhat softer approach toward the same end.

Banking Committees of both houses of Congress worked over the rent and housing proposal concurrently. A Senate Banking Subcommittee, under Sparkman of Alabama, started hearings on the housing bills almost immediately — early in February — while the House Committee rushed its consideration of extending rent controls, in strengthened form, for two years beyond March 31. The agreement was for each of the committees to take up the other subject when it had finished with its initial hearing. This was arranged in an effort to get the bills on the floor as soon as possible.

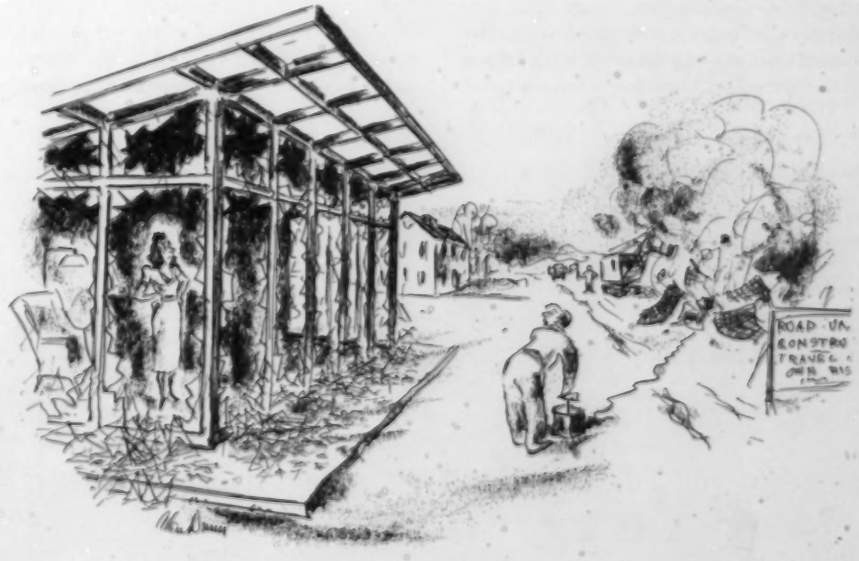
Throughout the legislation proposed runs an emphasis on more housing at lower sales and rental figures. Stressing this phase particularly is the Administration's own suggestion for amending the National Housing Act. This was introduced by the Banking Committee chairman, Senator Maybank of South Carolina, and Rep. Spence of Kentucky, clearly marking it for committee support. Dealing with the mortgage insurance programs and the secondary market program, it would, in brief:

1. Provide direct loans to veterans' housing cooperatives if private lending institutions failed to do the job. This is an entirely new proposal.

2. Exempt cooperatives, rental housing projects and low-cost homes built for sale from the present 50 per cent limitation on the amount of loans which the Federal National Mortgage Association can buy from any one mortgagee. This would have the effect of permitting the federal government to purchase without limit mortgages on low-priced housing.

3. Continue government insurance up to 90 per cent of 40-year, 4 per cent interest loans on nonprofit cooperative

(*Continued on page 10*)



"Sorry, lady—"

—Drawn for the RECORD by Alan Dunn

The use of Asphalt Tile in Modern Multiple Housing Projects

By Edwin H. Mittelbusher, Architect

MODERN FLOORING TECHNIQUES:

No. 4 in a series of articles on the use of asphalt tile flooring prepared by leading architects and building authorities for the information of the architectual and building professions.

THE TILE-TEX COMPANY, INC.

pioneer maker of asphalt tile.

The design of a rental housing project is secondary only to the financing pattern. The selection of each and every detail of construction, and the selection of each and every material is influenced thereby. The physical security for long term loans, by that I mean 27 to 32 year loans, must fulfill certain fundamental requisites and standards, some of which are dictated to us by the lenders, others by the myriad of building ordinance, and still others imposed upon us by the future tenants themselves.

We arrive, eventually then, at an area or range within which we must design. It is necessary, in order to obtain a fair return, that both construction, operating, and maintenance costs be consistent with the rental income expectancy. The fullest possible advantage must be taken of all the factors involved.

In the 366 unit rental project now under construction in LaGrange Park, there is about 360,000 square feet of floor area or surface (not including basement laundry, storage and boiler room area).

These floors consist of a 2½" concrete slab poured in place over light weight steel beams. The choice of a floor covering for these concrete floors received our utmost attention for many months.

We are faced primarily with a maintenance problem. In addition to that, we were concerned with the original cost of installation or first cost.

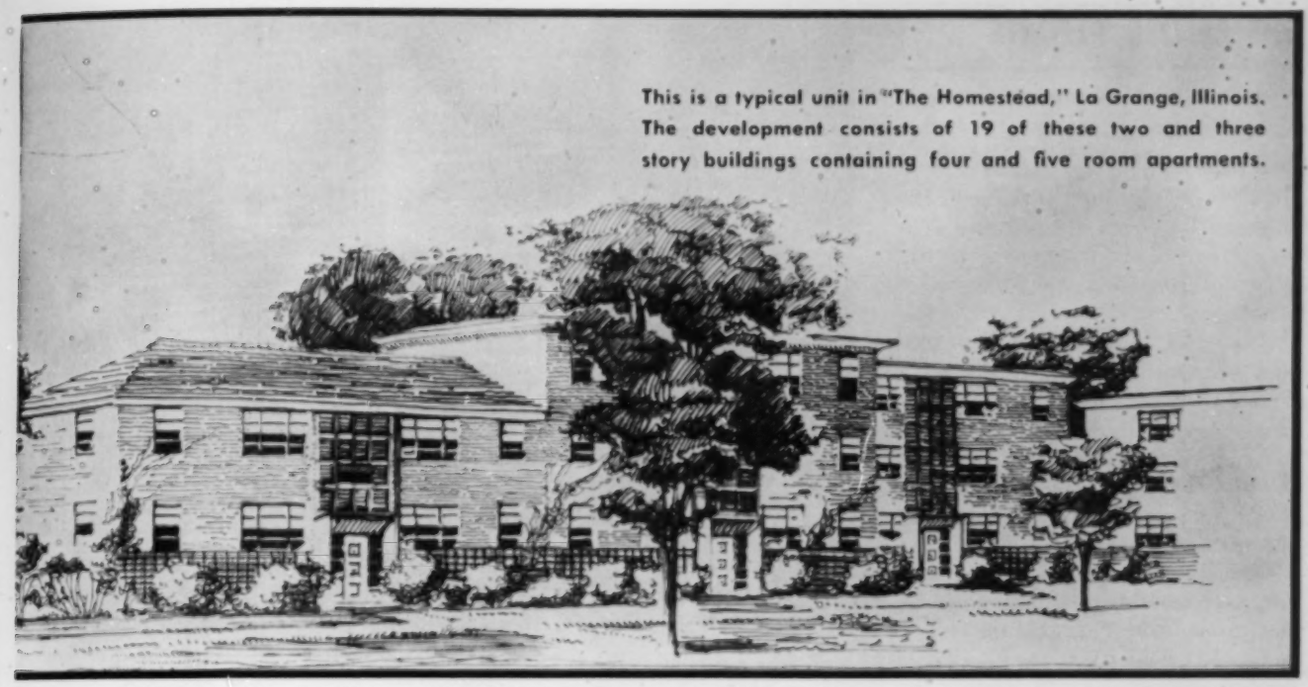
In this project there are 32 garden type apartments, in which the floors are about 2'-0" below grade. A floor material, such as asphalt tile, which resists moisture is required in these units.

Then last but not least in importance was the matter of floor color and its effect on the apartment color scheme. With these four basic and fundamental requirements in mind, we selected asphalt tile as the material which would best fulfill and satisfy every one of these standards and many more.

MAINTENANCE

Plain soap and water mopping clean it easily. The dirt is never absorbed into the material itself but stays on the surface where it is easy to remove. An occasional waxing will bring out the rich colors although this is not necessary. We chose Greaseproof Asphalt Tile for the ground floor

Reading from left to right, Charles E. Joern, President of Wm. Joern & Sons, Builders; Edwin H. Mittelbusher, Architect; and Elmer M. Larson, General Supt. for Wm. Joern & Sons... one of many discussions concerning "The Homestead."



This is a typical unit in "The Homestead," La Grange, Illinois. The development consists of 19 of these two and three story buildings containing four and five room apartments.

kitchens because it is grease proof, very seldom stains, and resists the passage of moisture. Replacement of tile is comparatively simple if unforseen damage should occur in certain areas.

LOW FIRST COST

Asphalt Tile flooring is one of the lowest cost floor coverings available. The preparation of the surface for the concrete sub-floor is a very simple operation consisting only of troweling the concrete slabs to a smooth level surface in preparation for the mastic adhesive. The individual tiles can then be rapidly set in place, cleaned and ready for use immediately thereafter. Apartments are ready for occupancy in a matter of a few hours.

COLOR

We have selected a marbleized deep brown color for the living rooms and bedrooms, and a very light gray for the kitchen floors to harmonize with the cabinets and counter-tops. These floors will blend in with the driftwood finish of the mill-work and the aluminum sash. These color schemes, being somewhat neutral, will give the tenants the maximum utility as well as the least problem insofar as blending in with their present or new furniture, rugs, draperies, etc., is concerned. These are very real considerations which definitely affect rentability and in our experience we have found that asphalt tile has received the general acclaim and acceptance required of floor coverings in this type of dwelling unit.

LONG WEAR AND LONG LIFE

When the matter of long life was given our attention, we examined asphalt tile floors that had been subjected to hard wear and traffic in stores and corridors for at least fifteen years. Upon close examination we came to the conclusion that this type of floor was practically "wear-proof."

RESILIENCY AND COMFORT

Figures indicate that the average housewife walks 25 miles per year making beds. This means that unless the floor is extremely resilient and comfortable, she wouldn't have enough energy left to complete the remaining household duties required of her. Asphalt tile is unusually resilient and less fatiguing than other type of floors. It is quiet as well, and provides a certain amount of sound-proofing, which is an important consideration in housing projects.

Tile-Tex Asphalt Tile floors have been in use for more than twenty years. This* quality *asphalt tile has convincingly demonstrated its ability to perform satisfactorily in many different types of applications where wear is heavy and budgets are limited. For more information, or reprints of this article, write The Tile-Tex Company, Inc. (subsidiary of The Flintkote Company), Chicago Heights, Illinois. Sales offices in Chicago, New York, Los Angeles, New Orleans, Toronto and Montreal.*

The TILE-TEX Company, Inc.
CHICAGO HEIGHTS, ILLINOIS

*REGISTERED TRADEMARK OF THE TILE-TEX COMPANY, INC.

This "aerial rendering" shows the entire "Homestead" project. There are 17 acres, 19 buildings, 366 four and five room apartments and 100 garages. Notice the careful planning of streets to minimize traffic hazards and provide "off-the-street" parking.

THE RECORD REPORTS

(*Continued from page 7*)

ownership housing projects but increase from 95 per cent to 100 per cent the insurance of such loans where at least 80 per cent of the members of the co-operative concerned are veterans of World War II. (Maximum amount of the mortgage in the case of the 90 per cent loan would remain at $8100 per family dwelling, or $1800 per room. In the case of the 100 per cent loan, maximum amount of the mortgage would be $9000 per family dwelling or $2000 per room. In all these instances the insurance would be based on current replacement costs.

4. Increase the total insurance authorization under Title II of the present Act by $1 billion. Use of the fund would require approval of the President.

It is obvious that this piece of legislation, drawn under the guidance of Raymond M. Foley, Housing and Home Finance Agency administrator, would greatly liberalize the use of government credit for financing and the construction of lower cost homes.

(*Continued on page 12*)

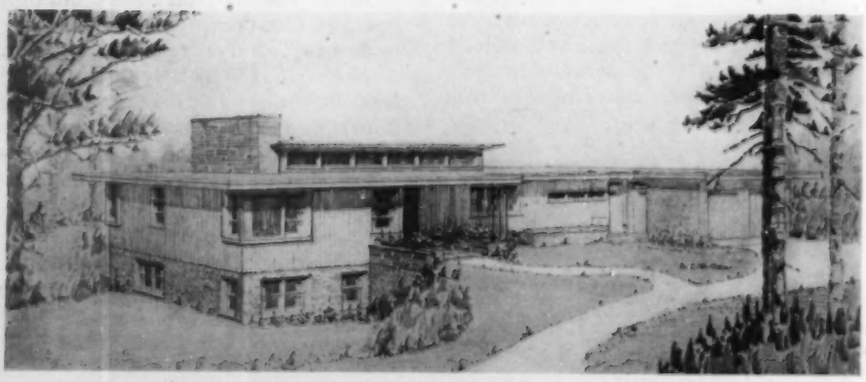
Architects' model of the University section of New York University-Bellevue Medical Center. The 20-story University Hospital is at right, Hall of Residence at extreme left

CONSTRUCTION OF MEDICAL CENTER TO START SOON

Details of new definitive architectural plans for the new University section of the New York University-Bellevue Medical Center, announced in mid-January, indicate a total cost of about $32,744,000 for the University's share of the Center. The plans now call for facilities for two medical schools, a 600-bed University Hospital designed primarily to serve patients in the middle-income brackets, and related clinics. Architects for the project are Skidmore, Owings & Merrill of New York. Construction is expected to begin this spring.

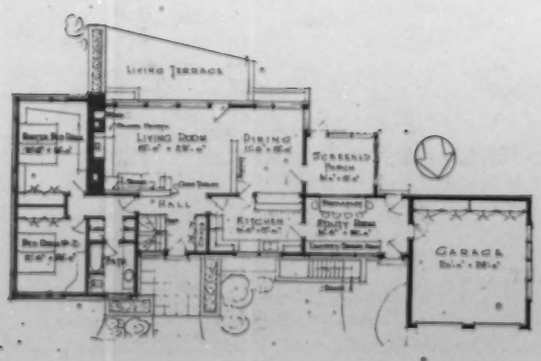
NEWS FROM CANADA

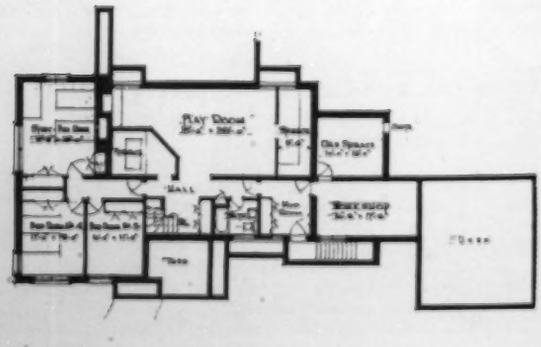
By John Caulfield Smith



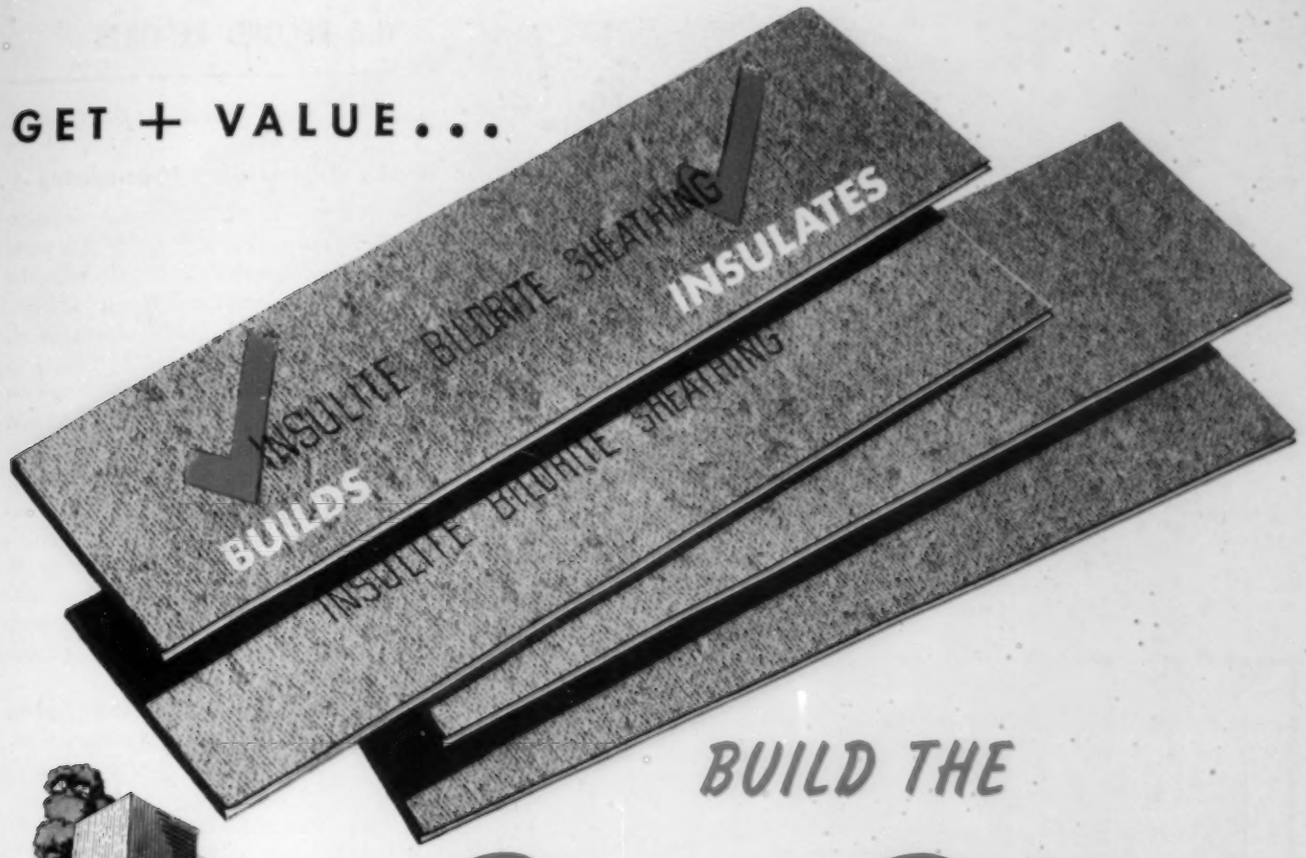
Stone and frame house (plans below) now under construction in Port Credit, Ont., 10 miles from Toronto, for Mr. and Mrs. T. C. Hewson. Designed by E. C. S. Cox, Architect, it faces south, overlooks a golf course, and combines one and two story height

(*News continued on page 146*)





GET + VALUE...



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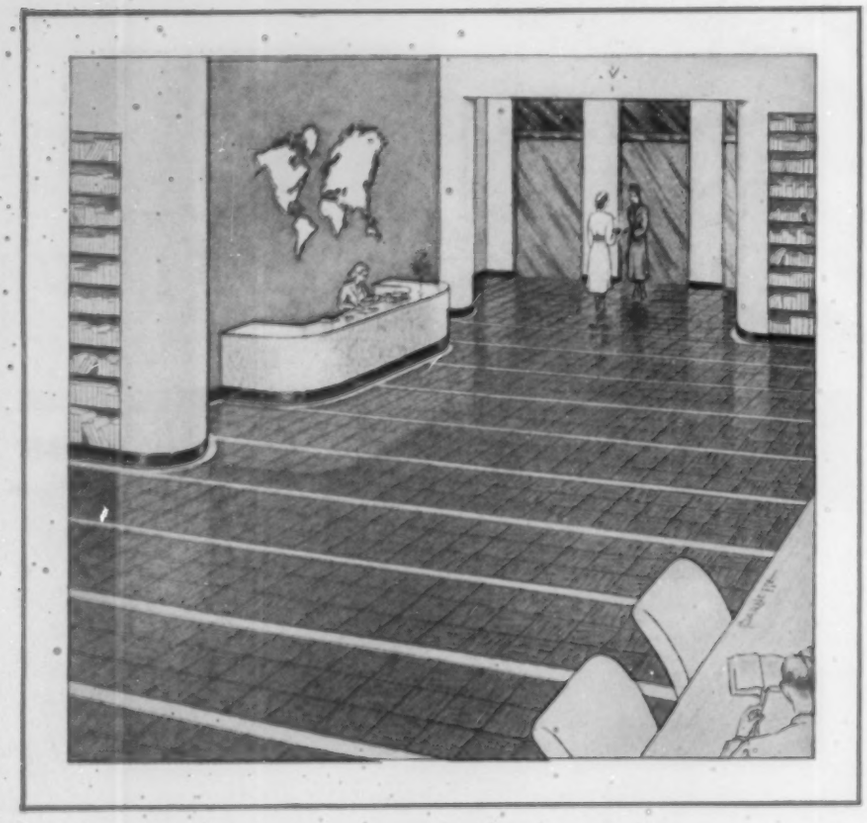

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THE RECORD REPORTS

(*Continued from page 10*)

Lower Cost Homes Materializing

Meanwhile the National Association of Home Builders is pointing with pride to the sucess of its efforts to increase the number of lower-cost homes being built. Of more than one million units of all types added to the housing supply in 1948, N.A.H.B. reports, thousands were of the Economy House variety and sold for $4500 to $8500. Two of every five homes purchased last year were bought by families with income of less than $3000, and four out of five by families with incomes under $5000. Eighty per cent of all houses sold went for less than $10,000 while the average purchase price paid by veterans for houses, old and new, was $7600.

N.A.H.B. is proud of these figures, contending that home builders — private home builders — are meeting the needs of relatively low-income families.

Agencies of government, incidentally, have been speeding up their plans to bring down the cost of home construction. A meeting of those concerned with the HHFA drive — officials of both government and industry groups — was held in January and field sessions aimed at taking the gospel of economic home building to the men who handle actual construction details, to the architect, the contractor, supplier, etc., began on February 8. An effort will be made to hold similar meetings in every city in the country of 10,000 population or over. The U.S. Chamber of Commerce is cooperating and local FHA officials are handling details of the conclaves.

Housing Research Programmed

New attention also is being given to research on housing. A significant move in this field is the recent appointment of Joseph H. Orendorff as Director of Design and Methods in HHFA's Division of Standardized Building Codes and Materials. Mr. Orendorff had temporarily handled administration of management and disposition policies for the war-built Lanham Act housing and now returns to the Division to supervise the development of modular construction research involving standardized dimensions for building materials. This is certain to be an expanding activity under present agency plans. The Housing Act of 1948 authorized the HHFA to create the Division for advancing adop-

(*Continued on page 14*)

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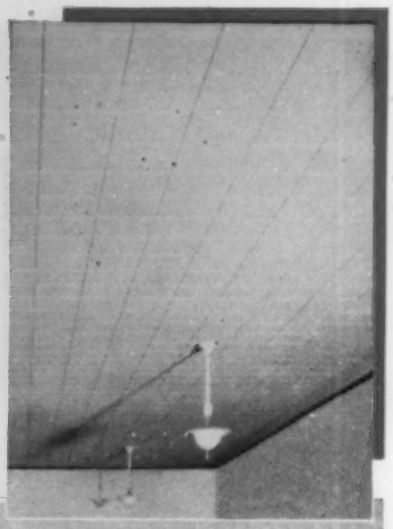

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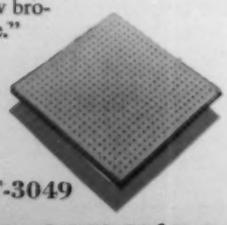

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*Based on room size 15' x 15'
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Put a ceiling on noise with

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THE RECORD REPORTS

(*Continued from page 12*)

tion of standardized building codes and standardized dimensions and methods. Officials expect this work to increase its strides immeasurably under legislation now before Congress.

A few weeks ago Mr. Foley announced the completion of arrangements, involving the signing of a $10,000 contract, whereby the National Research Council will act in an advisory capacity to the Division's research program on building techniques. National Council committees are composed of leading scientists and engineers from industry, educational and nonprofit organizations. Therefore this bridges the gap more effectively between government and industry research.

Making the announcement of the contract, Mr. Foley said: "Greater use of standardized parts, and improved methods of building are constructive policies, adoption of which would help in the solution of the problem of costs in the house building industry."

BRAB Pulse Is Quickened

Closer coordination of all research in construction was promised when members of the Building Research Advisory Board met in Washington in mid-February. This meeting breathed new life into the organization. BRAB was first thought of in the fall of 1946, was organized then and has been growing slowly since that time. The Board is a group of industry and government people interested in coordinating and advancing the research idea. It seeks eventually to get cooperation from all layers of industry, from the producers of building materials who now may be carrying on their own research projects in isolated and unknown instances. Bringing together information of these research activities, and making their benefits available to the construction industry as a whole, can go a long way toward improving building techniques — and lowering costs at the same time.

That is the aim. It is emphasized that BRAB intends to do no researching itself. The general chairman is Dr. Frank B. Jewett, a former president of the National Academy of Sciences. His executive committee is composed of Walter A. Taylor, director of research and education for the American Institute of Architects; Harry C. Plummer,

(*Continued on page 16*)

Nobody throws away Stainless Steel

Stainless steel *lasts*. Allegheny Metal stays bright and strong —gives lifetime service—under conditions of corrosion, heat and wear that send lesser metals to the junk-pile in a few years, or perhaps only months. Wherever a superior metal will give you advantage, you'll find it cheapest in the long run to use Allegheny Metal, the time-tested stainless steel.

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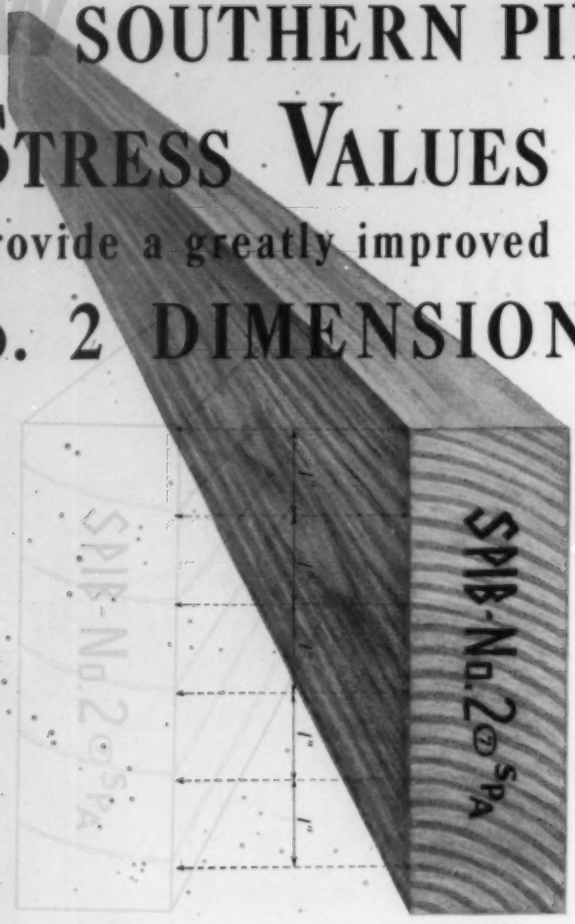
provide a greatly improved

No. 2 DIMENSION



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EXAMPLE:

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- ★ BETTER TEXTURE (MINIMUM 4 RINGS PER IN.)
- ★ SMALLER EDGE KNOTS
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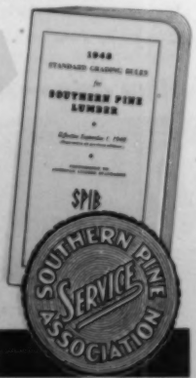
Possessing greater load-bearing strength than previous No. 2, this new grade of Southern Pine framing is better qualified for residential and light commercial construction. Proper seasoning is a definite provision, by which this material is *pre-shrunk* and may be used with safety for longer spans than heretofore.

AN ENGINEERED MATERIAL

Southern Pine has long been recognized as superior structural lumber. This new No. 2 grade can now be specified for definite load-bearing stresses *because it is an engineered material.*

WRITE FOR GRADING RULES

For authentic data to guide you in specifying or purchasing every Southern Pine classification, send for these new 1948 Grading Rules. Your copy, plus the Grade Use Guide, will be mailed on request.



Quality Southern Pine Is Available, Now!

SOUTHERN PINE ASSOCIATION

Canal Building . . . New Orleans 4, Louisiana

THE RECORD REPORTS

(*Continued from page 14*)

director of engineering and research for the Structural Clay Products Institute; Dr. C. F. Rassweiler, vice president in charge of research development for Johns-Manville Corp.; W. E. Reynolds, commissioner of the Public Buildings Administration; and Prof. William H. Scheick, coordinator of the Small Homes Council at the University of Illinois.

The form that BRAB activities will take from now on was more clearly defined at the Washington session. It may take its future operative clue from the National Highway Research Board, a group that has grown in 25 years to be a most valuable implementation instrument serving the highway industry. It is realized that the functions of the building industry are much different and in themselves diversified, but BRAB will grow into such an implementing body.

VA Hospital Program Cut

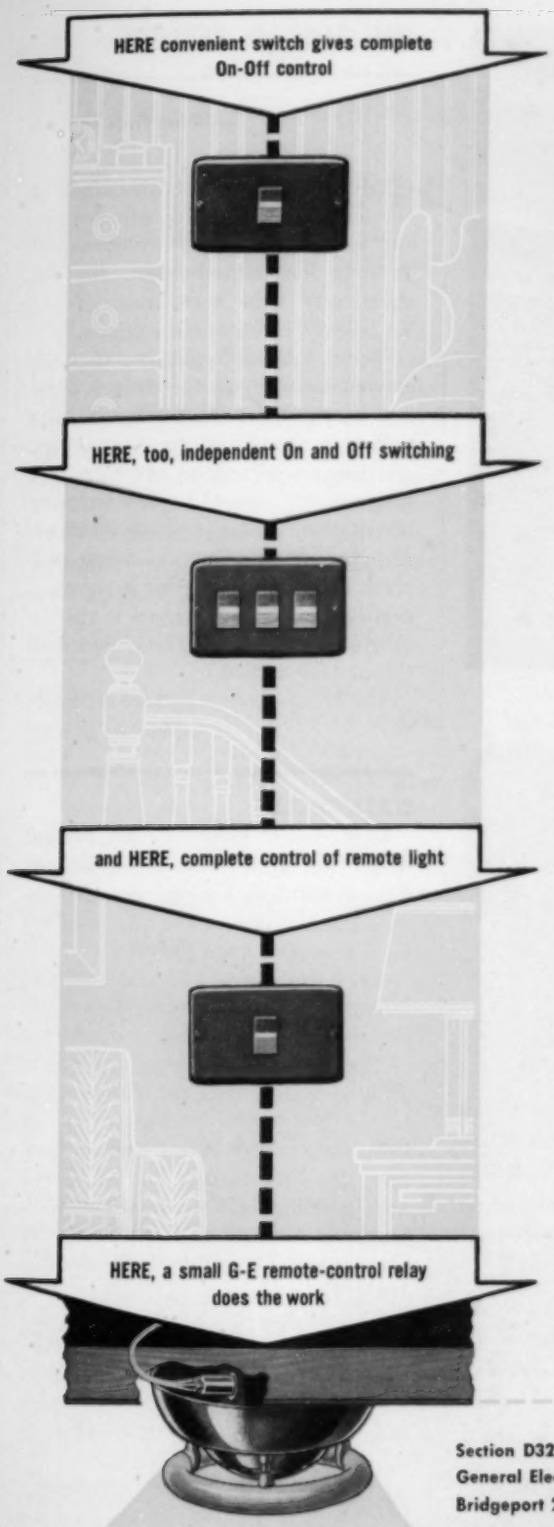
The architectural profession, along with all other segments of the building industry, was surprised by the President's sudden decision to cut back the Veterans Administration hospital construction program rather drastically. Mr. Truman revealed without previous indication that he had ordered the program slashed to the extent of 16,000 beds, both temporary and emergency types. Several firms throughout the country were caught in the midst of preparing plans and specifications for those hospitals struck from the list.

VA said the proposed construction of 24 new hospitals and reduction of the size of 14 others were involved in the mandate.

Repercussions are expected in Congress before the appropriation bills are passed. While Administrator Carl R. Gray, Jr., of the veterans' agency announced that the curtailed building program would not deny hospitalization to any service-connected veteran, the protest pressure on congressmen from their constituents is severe.

Veterans' organizations were quick to announce their opposition to the decision. The American Legion expressed this attitude when it announced: "At a time when there are two million veterans of both World Wars being compensated for service-incurred and aggra-

(*Continued on page 18*)


HERE convenient switch gives complete On-Off control
HERE, too, independent On and Off switching
and HERE, complete control of remote light
HERE, a small G-E remote-control relay does the work

Now, add dream-home lighting at budget-home cost!

Exciting, New General Electric Remote Control Wiring System Makes Multi-point Switching Practical, Economical

Convenience unlimited! That's General Electric's new wiring system—G-E remote control—the new design for electrical living that lets you plan downright ease for your most budget-minded clients.

With G-E remote control the homeowner no longer makes his nightly trip to check the cellar lights. He just pushes a button—in the living room, in the hall, or even in the bedroom—and he knows that troublesome cellar light is out. Garage lights, outside lights, the attic fan—all can be turned On or Off anywhere and everywhere in the house that's wired with the General Electric remote control wiring system. And, in every room, multi-point switching can put control of the lights in that room at every entranceway, even next to easychairs or other convenient spots. And the really amazing part of the remote control story is that it's designed to go in easily and economically.

You owe it to yourself to find out about the General Electric remote control wiring system. Get the facts and talk them over with your electrical contractor . . . mail the coupon now for complete details on this important development.

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Guth Futurliters
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HOW YOU CAN MAKE RECEPTION ROOMS SAY "WELCOME!"

with Guth precision-planned lighting

This is the reception room and general office of the noteworthy new American Osteopathic Association Building in Chicago, recently featured in ARCHITECTURAL RECORD. See how skillfully the architects have created an atmosphere of welcoming warmth with **Guth precision-planned** *Lighting!*

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THE RECORD REPORTS

(*Continued from page 16*)

vated disabilities, when thousands of new claims are pending adjudication, and when nearly 15,000 veterans are awaiting hospital admission, we will strenuously fight curtailment of the VA hospital construction program."

(Note: VA itself estimates that the amount lost through the cutback order was nearly $10 million. That is, $1.4 million in site acquisition expenditures, and between $7 million and $8 million spent on all technical services including preparation of plans and specifications. The decision to reduce, of course, will result in an immense saving in construction costs otherwise charged to the VA program. Administrator Gray estimated this at $280 million.)

The Administration had one argument

(*Continued on page 20*)

ELIOT CROSS

Eliot Cross, Architect, and founder of the New York real estate investment firm of Webb & Knapp, Inc., died on January 23 in Princeton, N. J., following a long illness. He was 65.

Mr. Cross was a practicing architect in New York for 40 years. He and his brother, John W. Cross, founded the architectural firm of Cross & Cross in 1907, and designed some of New York City's best-known buildings, among them the Hotel Barclay, Doctors Hospital, the Postum Building, the Harriman Building, and the new Tiffany & Company building on Fifth Avenue at 57th Street. The firm was dissolved in 1942.

In 1922 Mr. Cross, with P. Seward Webb and the late Robert C. Knapp, founded Webb & Knapp, serving as chairman of the firm's board of directors from its founding until 1947 when ill health forced him to retire.

HENRY E. RICHARDS

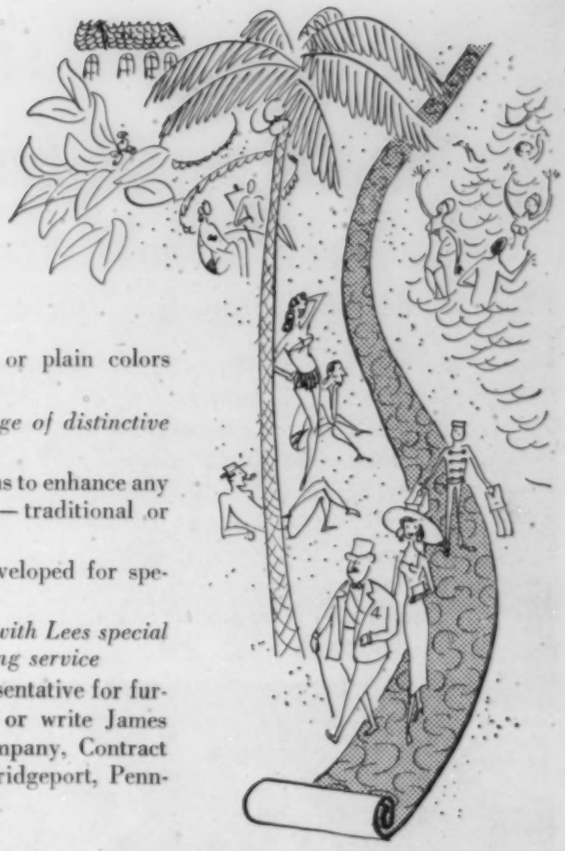
Henry E. Richards, alumnus of Harvard University with the class of 1869 and of Massachusetts Institute of Technology with the class of 1871, died at his home in Gardiner, Me., on January 26 at the age of 100.

An architect by profession, Mr. Richards practiced in Boston for seven years following his graduation from M.I.T., and then moved to Gardiner, where he was for many years head of the Richards Paper Company.

In Miami Beach's gracious Seaview Hotel

LEES CARPETS

greet the great of the world



Leisure, luxury and lovely Lees carpets make a world-famous threesome in this renowned Florida pleasure spot. Throughout the Seaview Hotel you will find beautiful long-lasting Lees Contract Carpets—first choice of hundreds of hotels, theatres, offices, clubs, pullman cars, and public buildings everywhere.

Lees Contract Carpets give you the most per carpeting dollar

... Actual use proves they wear longer.

... Specially created for heavy traffic.

Lees Contract Carpets look better

... Add quality and elegance to any interior.

... Beautiful patterns or plain colors that delight the eye.

Choose from wide range of distinctive designs and colors

... Appropriate patterns to enhance any decorating scheme — traditional or modern.

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Put this floor plate in your plant—or on your product—and say goodbye to costly slipping accidents. Even when the surface is wet or oily, exclusive engineered design with Super-Diamonds at 45° angles gives grip-without-a-slip safety! Easy to match without waste. Easy to clean with mop, broom or hose. Needs no maintenance. Use AW Super-Diamond for safe, strong, clean walkways, loading platforms, fire escapes, trench covers, running boards, machine tool bases—1001 other product and plant applications.

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THE RECORD REPORTS

(*Continued from page 18*)

for its decision: the saving on steel to result from cancellation of $280 million worth of heavy construction. The rift between the White House and steel producers over additional capacity, how much should be built and by whom, was growing in extent as the President pressed for power to put the federal government in a position to build steel plants should industry fail to take advantage of federal loans he proposed to extend for the purpose.

The publicly-announced reason for the reduction in the hospital construction program was this — re-evaluation since the end of the war has shown that estimated needs for hospital beds were "considerably larger than actually has proven necessary." Sixty-four individual projects not under contract at the time were surveyed in reaching the decision to drop 24 entirely and reduce 14 others.

The announcement came at a time when production prospects for most building materials, excluding steel and aluminum, are better than at any other time since the end of the war. The Producers' Council is confident that there will be an adequate supply to satisfy the volume of construction of all types anticipated in 1949.

Iron and steel companies spent $583 million in 1948 to expand and improve production facilities. The figure will increase to $627 million in 1949. Some producers have ventured the opinion that the 1949 requirements might actually be met in all major fields with the exception of transportation.

Federal Grants Promised Building

Large amounts of money in the form of federal grants are included in building construction bills introduced in the 81st Congress. The large scale federal aid to education bill which lost out in the last session and is being pushed again now, does not contain specific funds for building purposes. This fact has brought out a number of suggestions for direct federal grants to be used in school building construction alone. Foremost among these is the House bill authored by Rep. Joseph W. Martin, Jr., former GOP House Speaker. It would commit the government to an annual outlay of $300 million over a three-year period and require state and local governments to match the

(*Continued on page 22*)

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THE ALL ALUMINUM **VAMPCO**

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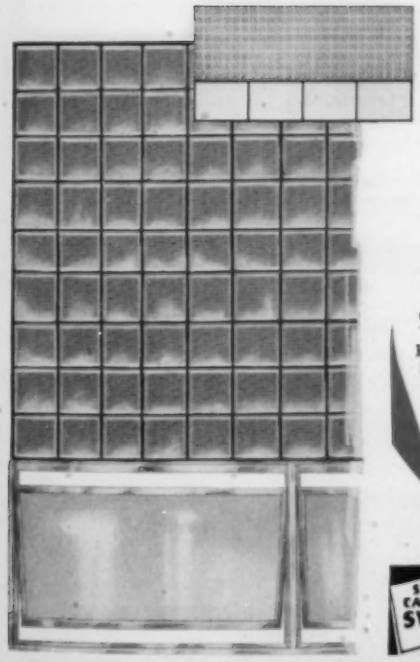
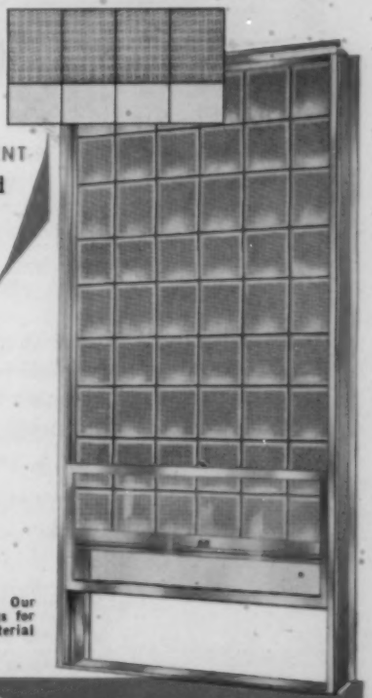


RIBBON TYPE

SINGLE HUNG



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This **VAMPCO** unit may be installed singly or in groups. Dimensioned for all standard glass block sizes to fit a wide variety of openings.

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For continuous ventilation or vision, **VAMPCO** ribbon units are fabricated to order up to 25 feet long and assembled ready for erection — as employed in the school building shown above. Vents may be as wide as 48 inches, up to 40 inches in height. Head and sill sections are continuous and absolutely watertight. No lintels required — deep head flanges, plus heavy mullions between ventilators, provide strength and stiffness to support entire load of glass block.

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FOR COMPLETE DATA

Write for descriptive literature and full size details. Our Engineering Department will provide detailed drawings for ribbon-type installation when dimensional and material data are provided.

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No structural lintel required . . . All-aluminum construction . . . Completely fabricated at factory—eliminating assembly of mullions and covers . . . Projected type ventilation.

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SINGLE-HUNG WINDOWS

All-aluminum construction . . . Completely weatherproof and waterproof . . . Glass block in sash integral in one frame . . . Easy access for cleaning block and sash.

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Modern dairy plant in Richmond, Virginia.
Architects: Ballou & Justice

In this attractive, modern plant, it's *mullions* by Alberene — because Alberene mullions match so well the shadow effect of the windows . . . blend so perfectly with the exterior of the building as a whole.

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Here's why —

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• **Financially,** Alberene soapstone is *right* for pleasing even your most budget-minded client. *Because* . . . its reasonable price . . . its ability to be cut into thin sections . . . *and* its outstanding durability makes it *triply economical.*

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THE RECORD REPORTS

(*Continued from page 20*)

federal grants on a 50–50 basis. Altogether, this calls for a school building program nearing the $2 billion figure over the three years.

Important in the Martin legislation is the fact that it gives state education departments authority to determine priorities for school buildings. This enhanced its chances for passage by removing a common area for criticism — federal regulation of the school systems.

The name of Senator Robert Taft gives strength to a measure introduced by four Senators; this would double the volume of construction of non-federal hospitals in the program administered by the U.S. Public Health Service under the Hill-Burton hospital construction act. Sponsoring the bill with Taft are Senators Ellender (La.), Hill (Ala.), and Smith (N.J.).

In addition to increasing federal grants for hospital and health center construction from $75 million annually to $150 million, the Senate bill provides for:

1. Extending the time of operation of the program another five years beyond 1949, making a total of eight years instead of the five originally specified.

2. Placing allotments of federal funds for individual projects on the same basis of "variable need" as that now determining the overall allotment to any state.

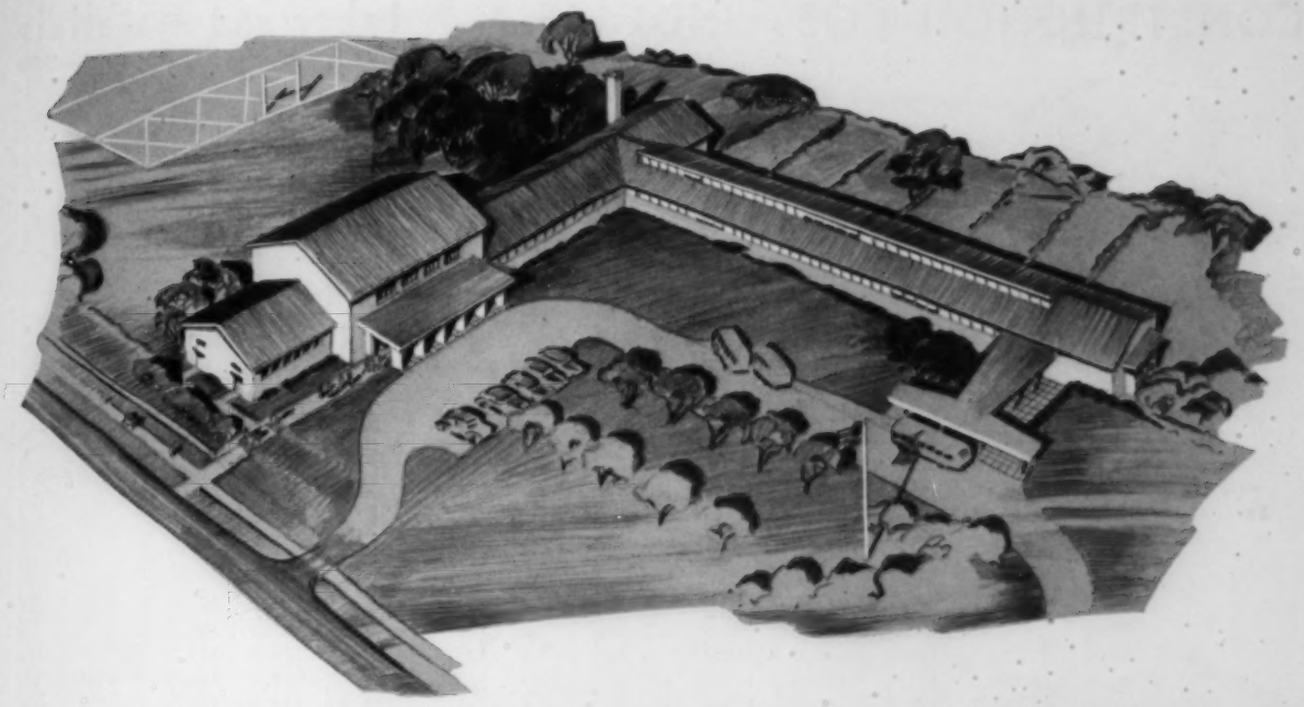
3. An extra $1.2 million in federal money for research and experiment.

4. Federal funds to aid states in administration of hospitals and health centers.

The first specific indication of the nation's school construction and equipment needs has been given by the Federal Works Agency's Office of Economic Research. Following several months of work on the subject, this Office places total overall requirements, in terms of 1947 cost, at $11 billion. This amount will have to be spent before the current critical shortage in classroom space for public elementary and secondary education can be overcome.

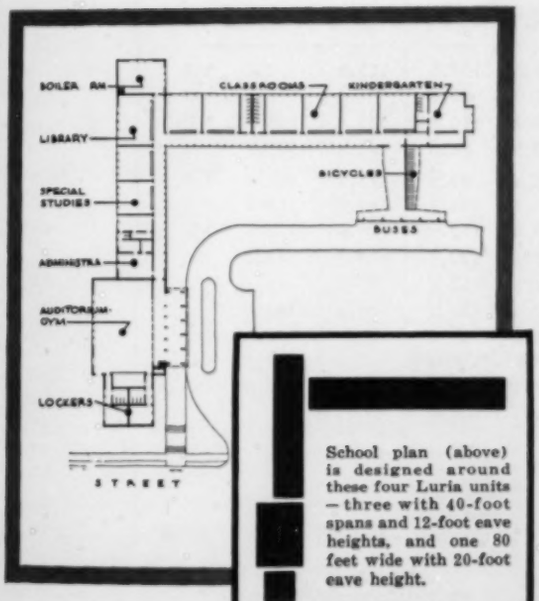
The extremely large backlog reflects a long period of underbuilding and persistent accumulation of needs through the past several years. Architects specializing in school buildings will be coping with this increasing work when

(*Continued on page 160*)



We can have more new schools like this!

—thanks to the imagination of architects who realize the tremendous new possibilities in STANDARD BUILDINGS *by* LURIA



School plan (above) is designed around these four Luria units — three with 40-foot spans and 12-foot eave heights, and one 80 feet wide with 20-foot eave height.

Most people would never guess, in looking at the fine modern school shown above, that it was designed around a group of perfectly *standard* buildings. For here is complete architectural freedom—even to the choice of collateral materials, optional features and accessories. Yet the fact that these are Standard Buildings by Luria makes this school readily available anywhere — and keeps it well within the limits of the average school budget!

Far from *limiting* the imagination of the architect, Standard Buildings by Luria actually create new opportunities for design, and widen the circle of his prospective clients. For here is a new and flexible medium to work with—permanent, steel-frame structures that can be incorporated into any one-story plan with complete confidence.

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Luria buildings are available now—with clear spans of 40 to 100 feet, eave heights of 12 to 20 feet, and any desired length in increments of 20 feet.

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CONSTRUCTION COST INDEXES — Labor and Materials

United States average 1926–1929 = 100

Presented by Clyde Shute, manager, Statistical and Research Division, F. W. Dodge Corporation, from data compiled by E. H. Boeckh & Associates, Inc.

NEW YORK

Period	Residential		Apts., Hotels, Office Bldgs.	Commercial and Factory Buildings	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1920	136.1	136.9	123.3	123.6	122.6
1925	121.5	122.8	111.4	113.3	110.3
1930	127.0	126.7	124.1	128.0	123.6
1935	93.8	91.3	104.7	108.5	105.5
1939	123.5	122.4	130.7	133.4	130.1
1940	126.3	125.1	132.2	135.1	131.4
1941	134.5	135.1	135.1	137.2	134.5
1942	139.1	140.7	137.9	139.3	137.1
1943	142.5	144.5	140.2	141.7	139.0
1944	153.1	154.3	149.6	152.6	149.6
1945	160.5	161.7	156.3	158.0	155.4
1946	181.8	182.4	177.2	179.0	174.8
1947	219.3	222.0	207.6	207.5	203.8
Oct. 1948	257.5	257.8	248.1	252.2	246.6
Nov. 1948	256.1	256.0	247.8	252.0	246.2
Dec. 1948	252.6	251.5	247.2	251.6	245.3
	% increase over 1939				
Dec. 1948	**104.5**	**105.5**	**89.1**	**88.6**	**88.6**

ATLANTA

Period	Residential		Apts., Hotels, Office Bldgs.	Commercial and Factory Buildings	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1920	122.8	122.9	108.6	109.8	105.7
1925	86.4	85.0	88.6	92.5	83.4
1930	82.1	80.9	84.5	86.1	83.6
1935	72.3	67.9	84.0	87.1	85.1
1939	86.3	83.1	95.1	97.4	94.7
1940	91.0	89.0	96.9	98.5	97.5
1941	97.5	96.1	99.9	101.4	100.8
1942	102.8	102.5	104.4	104.9	105.1
1943	109.2	109.8	108.5	108.1	108.7
1944	123.2	124.5	117.3	117.2	118.2
1945	132.1	133.9	123.2	122.8	123.3
1946	148.1	149.2	136.8	136.4	135.1
1947	180.4	184.0	158.1	157.1	158.0
Oct. 1948	204.8	207.7	186.5	185.8	184.7
Nov. 1948	202.7	205.0	186.1	185.6	184.2
Dec. 1948	199.2	200.5	188.5	185.2	183.3
	% increase over 1939				
Dec. 1948	**130.8**	**141.3**	**98.2**	**90.1**	**93.6**

ST. LOUIS

Period	Residential		Apts., Hotels, Office Bldgs.	Commercial and Factory Buildings	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1920	118.1	121.1	112.1	110.7	113.1
1925	118.6	118.4	116.3	118.1	114.4
1930	108.9	108.3	112.4	115.3	111.3
1935	95.1	90.1	104.1	108.3	105.4
1939	110.2	107.0	118.7	119.8	119.0
1940	112.6	110.1	119.3	120.3	119.4
1941	118.8	118.0	121.2	121.7	122.2
1942	124.5	123.3	126.9	128.6	126.9
1943	128.2	126.4	131.2	133.3	130.3
1944	138.4	138.4	135.7	136.7	136.6
1945	152.8	152.3	146.2	148.5	145.6
1946	167.1	167.4	159.1	161.1	158.1
1947	202.4	203.8	183.9	184.2	184.0
Oct. 1948	233.9	236.7	215.9	218.3	215.7
Nov. 1948	231.5	233.6	215.5	218.0	215.1
Dec. 1948	227.6	228.6	214.8	217.6	214.1
	% increase over 1939				
Dec. 1948	**106.5**	**113.6**	**81.0**	**81.6**	**79.9**

SAN FRANCISCO

Period	Residential		Apts., Hotels, Office Bldgs.	Commercial and Factory Buildings	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1920	108.8	107.5	115.2	115.1	122.1
1925	91.0	86.5	99.5	102.1	98.0
1930	90.8	86.8	100.4	104.9	100.4
1935	89.5	84.5	96.4	103.7	99.7
1939	105.6	99.3	117.4	121.9	116.5
1940	106.4	101.2	116.3	120.1	115.5
1941	116.3	112.9	120.5	123.4	124.3
1942	123.6	120.1	127.5	129.3	130.8
1943	131.3	127.7	133.2	136.6	136.3
1944	139.4	137.1	139.4	142.0	142.4
1945	146.2	144.3	144.5	146.8	147.9
1946	159.7	157.5	157.9	159.3	160.0
1947	193.1	191.6	183.7	186.8	186.9
Oct. 1948	225.6	223.3	216.2	221.7	219.9
Nov. 1948	224.2	221.5	215.9	221.5	219.5
Dec. 1948	220.7	217.0	215.3	221.1	218.6
	% increase over 1939				
Dec. 1948	**109.0**	**118.5**	**83.4**	**81.3**	**87.6**

The index numbers shown are for combined material and labor costs. The indexes for each separate type of construction relate to the United States average for 1926–29 for that particular type — considered 100.

Cost comparisons, as percentage differences for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.:

index for city A = 110
index for city B = 95

(both indexes must be for the same type of construction).

Then: costs in A are approximately 16 per cent higher than in B.

$$\frac{110-95}{95} = 0.158$$

Conversely: costs in B are approximately 14 per cent lower than in A.

$$\frac{110-95}{110} = 0.136$$

Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926–29.

Material prices and wage rates used in the current indexes make no allowance for payments in excess of published list prices, thus indexes reflect minimum costs and not necessarily actual costs.

These index numbers will appear whenever changes are significant.

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REQUIRED READING

LE CORBUSIER AGAIN

Concerning Town Planning. By Le Corbusier. Translated by Clive Entwistle. The Yale University Press (New Haven, Conn.), 1948. 5¾ by 8⅜ in. 128 pp., illus. $2.75.

The publishers of this first English translation of Le Corbusier's PROPOS D'URBANISME call it that indefatigable and prolific author's "most important postwar book," and perhaps it is. Certainly it is one of his most interesting, packed full of typical Le Corbusier-isms and drawings.

"Towns are born, and grow throughout the ages; they deform under the assaults of life." From that introductory sentence all the way through to the final conclusion reached, this is a volume carefully calculated to stimulate and intrigue the imagination of its reader. It takes the form of replies to a series of 18 questions put to Le Corbusier in 1944 by an English source, and it takes the opportunity once again to expound the philosophies of town planning which for years have been synonymous with the name of their author.

CITY PLANNING

Planning the Modern City. By Harold MacLean Lewis. John Wiley & Sons, Inc. (440 Fourth Ave., New York 16), 1949. 7½ by 10¼ in. Two volumes: Vol. I, xxi + 284 pp.; Vol. II, xii + 224 pp.; illus. $6.00 each.

Subtitled "A Modern Treatment Based on THE PLANNING OF THE MODERN CITY by Nelson P. Lewis," these two volumes are inherently a revised edition of the text first published in 1916, but the revision has been so extensive that the present work ranks as a new publication. Its author is the son of Nelson P. Lewis, author of the original volume.

Following several introductory chapters defining city planning and describing its goals, Volume I of the present edition plunges into such subjects as population distribution and trends, land surveys, zoning, transportation, development of shopping centers. Planning trends both here and abroad are discussed, and the mechanics of planning are thoroughly described. Volume II takes up neighborhood and community planning, housing, redevelopment of blighted areas, and special planning problems such as airport location, parking and decentralization of industry. A final section is devoted to legal, economic and administrative problems. Maps, diagrams, photos and drawings abound throughout both volumes.

Arranged as it is with questions and reference lists at the end of each chapter, the book is ideally suited for classroom use as well as for independent study.

Mr. Lewis has adhered closely to the planning principles laid down by his father, but has replaced references, brought statistics up to date, and added new chapters and much new material. The result is a book which very likely will be a standard text for some time.

NEIGHBORHOOD STANDARDS

Planning the Neighborhood. By the American Public Health Association Committee on the Hygiene of Housing. Public Administration Service (1313 E. 60th St., Chicago 7, Ill.), 1948. 7¾ by 10½ in. viii + 90 pp. $2.50.

Based upon the authority, standards and findings of the American Public Health Association Committee on the Hygiene of Housing, PLANNING THE NEIGHBORHOOD is concerned with criteria for the environment of residential areas — with the physical setting in which homes should be located. It includes basic health standards which may direct the planning of the residential neighborhood, and the Committee's recommendations for the selection and development of sites.

Intended to reach several groups (personnel of planning and zoning boards, architects, builders, producers of building materials, government building program authorities, etc.), this brief volume is admittedly not a manual of design, but "a formulation of those principles and standards which the technician will use in combinations to be determined by him in the course of his design solutions."

ENVIRONMENTAL SANITATION

Public Health Engineering: Vol. I. By Earle B. Phelps. John Wiley & Sons, Inc. (440 Fourth Ave., New York 16), 1948. 5¾ by 8½ in. ix + 655 pp., illus. $7.50.

In this highly technical book, written primarily for the public health engineer, the architect will find much information not readily available to him elsewhere. For instance, there is a detailed chapter on the air supply of enclosed places, which includes such items as air pollution by human occupancy and the effect of industrial operations. Another chapter deals with heating, ventilation and air conditioning needs and practice, and another with lighting. Still others treat sewage disposal, swimming pool requirements, and rural sanitation.

IT'S TERRIBLY SAD WHEN A CONE
IS FRUSTRATED AND STANDS ALL ALONE
WITH ITS APEX TRUNCATED... WHENEVER
I FIND ONE WHOSE SLOPE SEEMS INVITING
I COVER ITS SURFACE WITH METRICAL WRITING
IN CHEERFUL TETRAMETER, SOMEWHAT IDYLLIC
CAST IN A MOULD THAT IS SLIGHTLY DACTYLLIC
WHENEVER AN APEX HAS PROVEN SO FRACTILE
THE FRUSTUM HAS DEFINITE NEED OF A DACTYL
TO LIGHTEN ITS SPIRIT AND SERVE AS A TONIC
FOR MALADIES EQUALLY CHRONIC AND COMIC.
EXCUSE ME, DEAR CONE, IF MY METRE IS HECTIC
SOME OF THE SYLLABLES WENT CATALECTIC

"Dactyllic Frustum." From "Geo-Metric Verse" by Gerald Lynton Kaufman, A.I.A.

ARCHITECTONICS IN RHYME

Geo-metric Verse. By Gerald Lynton Kaufman. The Beechhurst Press (296 Broadway, New York 7), 1948. 5 by 6½ in. 64 pp., illus. $1.50.

"Poetry forms in mathematics
Written mostly for fanatics" —
Squarody or Ellipsonnet?
Kaufman waxes glib upon it!
Dactyllic Frustum, Short Pantoum
Dissipate the darkest gloom.
If your sense of humor's failing
Concaverse will ease the ailing,
While Cubicouplets or Convextasy
Obviate neuro-perplextasy.
Growl because you have a headache?
Kaufman's cure will be an earthquake
To shake your ills
But quick: no pills.
For there's indeed no whim pedantic
In *this* volume's gyro-antic.
Let's give a rousing cheer, I say,
For Mr. Kaufman, *A.I.A.!*

LATIN AMERICAN ART

A Guide to the Art of Latin America. Edited by Robert C. Smith and Elizabeth Wilder. No. 21 in the Latin American Series of The Library of Congress. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., 5¾ by 9 in. 480 pp. $1.50.

Architects participating in the tour to Mexico following the A.I.A. Convention in Houston this month will welcome this extensive bibliography listing some 5000 books and articles on the art of the 20 Latin American republics and Puerto Rico.

The bibliography is divided into three chronological periods: the Colonial Period, the 19th Century, and the Contemporary Period. A preliminary section lists general works covering the whole field, and texts dealing with two or more periods. For each period there are three preliminary groupings: Latin America,

(Continued on page 30)

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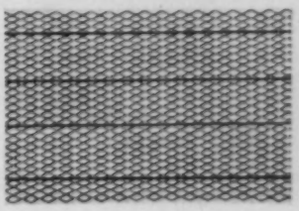

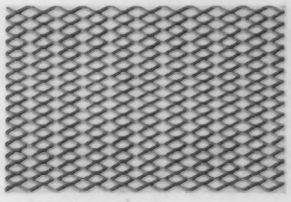

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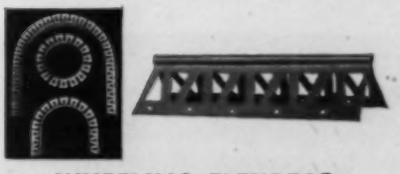

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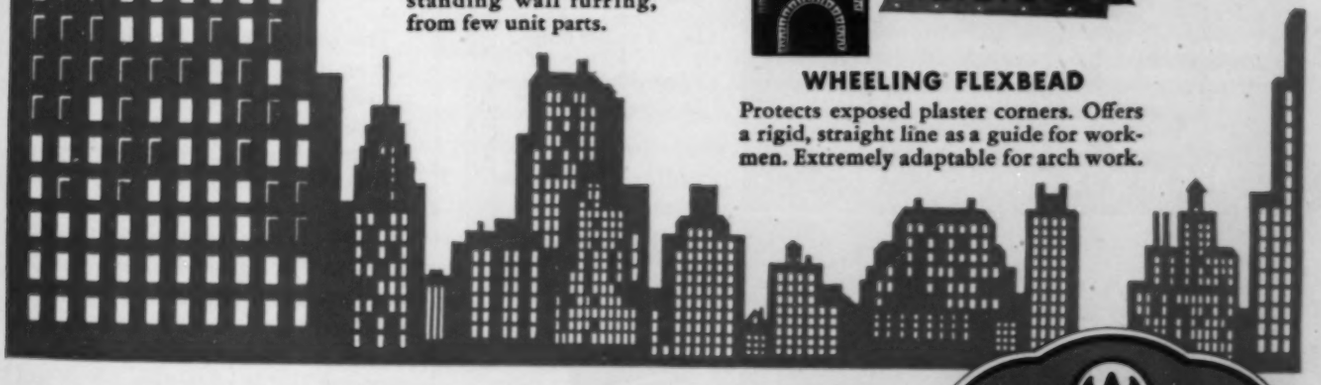

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REQUIRED READING

(Continued from page 28)

South America, Central America and the West Indies. These are followed by sections for each country, subdivided into subjects such as architecture, graphic arts, painting, sculpture, and so on. This simple pattern makes it easy to find exactly the kind of reference desired.

HOSPITALS

The Hospital Building: Seminar Addresses at the 1947 A.I.A. Convention. Compiled and Edited by Walter A. Taylor. The American Institute of Architects (The Octagon, Washington 6, D. C.), 1948. 8½ by 11 in. 72 pp., illus. To members of the A.I.A., $1.00; to non-members, $2.00.

In answer to repeated demands, the lectures given at the Hospital Seminars at the 1947 A.I.A. Convention have now been compiled in book form, supplemented by a comprehensive bibliography for the subjects covered and additional data and notes reprinted from the A.I.A. *Bulletin*. The result is a compact volume which no architect interested in hospital construction can afford to miss.

Subjects covered include: Administrative Aspects of Hospital Design; Programming for Hospital Design; Schematic Plans for Hospitals (with diagrams); The Elements of the Hospital; Hospital Construction, Detailing, Finishes, and Equipment. Authors include some of the foremost hospital architects and medical authorities in the country.

IDEAS FOR THE HOME

Home Furnishing. By Anna Hong Rutt. 2nd Edition. John Wiley & Sons, Inc. (440 Fourth Ave., New York 16), 1948. 6 by 9 in. viii + 508 pp., illus. $6.00.

This new edition of Mrs. Rutt's basic text on home furnishing contains much material not included in the earlier edition, noticeably the entirely new chapters on landscaping, house planning, and exterior house design.

The book was written as a textbook for classes in home planning and furnishing as well as a general guide for homemakers and interior decorators. It is, therefore, both simply written and greatly detailed. Even so, architects may well find it interesting *per se*, and certainly will want to be familiar with it for the sake of their clients, many of whom are likely to have studied it assiduously.

The book is lavishly illustrated, and covers its subject all the way from foundations to flower arrangements.

ARCHITECTURAL

RECORD

REVELATION BY COMPETITION

WHEN you come to think of it (and we hope you will), the designs submitted in competition are most revealing — and in more ways than one. They disclose present architectural virtues, vices and significant trends, as well as discovering a modicum of hidden talent. They are worth far more than a casual glance and a dismissal with a note of personal approval or rejection. The designs inherently reflect and express current influences, philosophies, tastes, theories, educational emphases, esthetic tenets — and these, rather than the designs themselves, are food for thought. They thus reveal much of the present state of architectural design — and are portents of its future. They may even suggest that it is time to take stock of the current approaches and emphases with an eye to clarifying our own thinking and establishing a new or reaffirmed direction.

It is natural, in part because of the forward-looking sponsorship of the competition, that one should find no designs that hark back to period stylism. All are in the vernacular and idioms of the present. It is not difficult, however, to find the sources of inspiration (or imitation) for most of the designs; the great tradition of architecture — eclecticism — is still evident. The designers no longer choose the masses, molding and mannerisms of Brunelleschi, Bramante, Sanmicheli and Vignola, but select as models the works of Mies, Wright, Corbusier, Gropius, Breuer or other modern masters.

As has always been the case, some designers use their chosen precedent intelligently, others adopt unthinkingly forms or details from the latest magazine-featured building. Novelty of design rather than appropriateness of form to purpose too often proves more intriguing to the young (or old) disciple whose mental processes do not involve analysis.

Too few designs show minds and hands thoroughly trained to plan for use — to analyze the activities to be housed and the character of the space and facilities to serve them. It takes imagination as well as logic to provide an environment that is both thoroughly convenient in use and a joy to experience. Too many plans submitted seemed to be exercises in abstract pattern rather than indications of thoughtfully organized space for people to use and enjoy.

This preoccupation with form may indicate the current dominance of the esthetic interest in architecture rather than the materialistic, scientific, or so-called "functional." Such an interest may augur well for the future of the fine art of architecture, whether one expects or hopes the developments will tend toward "monumentality," "the new empiricism," "indigenous localism," the "organic" or what have you.

Whether or not you find that any of the designs chosen by the jury solve the problem of a Mid-Western community center "which will arouse civic pride as well as serve its particular function," we commend to your attention the designs and the jury report and comment as indications of the influences of present educational methods, current periodicals, and professional design leadership on the younger generation whose genius or talent will not always be hidden.

Kenneth K. Stowell

EDITOR

HIDDEN TALENT COMPETITION

REPORT OF THE JURY

Joseph Hudnut, Chairman

The jurors are puzzled by a plan. In the usual order, Wallace K. Harrison (hiding Morris Ketchum), Eero Saarinen, Mies van der Rohe, and Dean Hudnut. Below: Mr. Ketchum is no longer hidden

The jury looks up at a design still in the running. From left to right, Morris Ketchum, Ludwig Mies van der Rohe, Eero Saarinen, Wallace K. Harrison and Dean Joseph Hudnut

APPROXIMATELY 500 designs were submitted in the Hidden Talent Competition. These came from every part of the country and furnished as a whole an arresting presentation of the attitude and the ideals of our younger designers in the field of architecture.

In general it can not be said that the impression created by these designs is an inspiring one. Most of the designs were humdrum in the extreme and the quantity of gold which they unearthed seemed shockingly disproportionate to the dross. Most of the competitors seemed well satisfied to present a practical or commonsense arrangement of the elements and then to clothe these with the familiar clichés of modernism. Rare, indeed, was the designer who attempted to draw from the work to be done and the method to be used that organic form and expression which are the essentials of good design.

The jury gave First Prize to the design of Mr. Joseph Yusuru Fujikawa, of Chicago, because it seemed to them that the design he submitted did possess that kind of organic order which has its source directly in the purpose of the building and in its structure.

It may be thought that a design which is symmetrical in its space arrangement and as simple as the Parthenon in its outward aspects could not be called modern, but to the jury it seemed quite obvious that this symmetry of space was not forced upon the program from some academic source and that the simplicity of the enframement was arrived at through a sincere desire to achieve an expression consistent with the idea of community participation. After all, the requirements of the building were very simple and certainly did not require that torturing of space into all manner of strange relationships and forms which was characteristic of at least half of the designs submitted and it seemed to the jury that no expression could be more suitable for the life of the community than classic purity in outward form. Community life is not expressed in extreme individuality but rather

The Jury, beginning its work January 7th, 1949. Final decisions were made on the 8th. Seated, Philip C. Johnson, Professional Adviser (Museum of Modern Art); Ludwig Mies van der Rohe, Director, Department of Architecture, Illinois Institute of Technology. Standing, left to right: Wallace K. Harrison, Director of Planning, United Nations Headquarters; Eero Saarinen, winner of Jefferson National Memorial Competition; Kenneth K. Stowell, Professional Adviser (ARCHITECTURAL RECORD); Morris Ketchum, author "Shops and Stores"; Joseph Hudnut, Dean, Graduate School of Design, Harvard University, Chairman of Jury

in that serene universality which we associate with Greek architecture and which it should be our effort to recapture and make visible in terms of our own technologies.

The Second Prize — a design submitted by Mr. G. Lee Everidge, of Oklahoma City — would seem at first glance to present a curious contrast to the design given First Prize. Certainly it lacks the classic restraint and dignity of the First Prize entry. The jury nevertheless felt that more than one form of expression might be appropriate to the program and that a design based upon the exploitation of present-day structural techniques and upon an ordering of space which is in every way simple and organic might deserve almost equal consideration with the more abstract beauty of the design awarded First Prize. The relationship of lounge, lobby and auditorium is admirable and if the relation of the structure to the spatial pattern is somewhat arbitrary it does not, at any rate, do violence to good sense in planning and construction. There is about the Second Prize design a certain sculptural quality which gives it great interest. Its esthetic might be defined as structural baroque — a form of expression certainly not wholly uncongenial to a mechanized civilization. Some members of the jury could not accept the use of a costly and conspicuous ramp as a means of access to general purpose rooms in a balcony, but it must be admitted that this feature is a source of vitality and interest in the design.

The Third Prize, submitted by Mr. Edward Chase Weren, of Bloomfield Hills, is a design which in many ways achieves the more classic qualities of the design given First Prize. Mr. Weren's design is indeed the most original in conception among those submitted and it combines in a striking way novelty of esthetic expression and excellent judgment in the arrangement of plans. The lounge is so placed as to command wide vistas into the surrounding park, while the elements placed to right and left are enclosed in a double enframement — first of glass and then of stone. This contrast of open centre and enclosed areas might well result in a pattern of great distinction and beauty. The sense of enclosure would play against the open vistas in a charming manner, and the quality of lighting, especially that of the auditorium, would be not only novel but certainly most satisfying. It may be that in the Third Prize design there is lacking that sense of the community which seemed to the jury to be an essential in the expression to be given the building. Community life could hardly be expressed in an enclosure of blank stone walls. Perhaps also the intimate quality of the interior spaces would be more suitable for a residence than for a public building.

The design submitted by Herbert S. Johnson, of Gainesville, Florida, was given Fourth Place since it offered a plan which seemed logical, even if somewhat more loosely organized than the designs previously mentioned. Mr. Johnson has exploited two of the favorite clichés in modern design; namely, the butterfly roof and the court open through the roof. These were once interesting devices but it must be said frankly that they have lost something of their novelty after 100,000 repetitions.

The design awarded Fifth Place submitted by Mr. William R. Reed, of Chicago, won the jury by its daring originality and the boldness of its attack upon the problem. Had the theme been other than that of a community centre, this design would have received a higher rating; but the jury found it hard to reconcile the design with the requirements or the expression of a mid-western community.

The design of Mr. Louis F. Mammier, of Brooklyn, New York, would have received a higher place, had it not been for the strange inconsistency of judgment which weighted a row of metal columns with a wall of rubble masonry. Mr. Mammier's plan is excellent, not

only because of its good sense but also because of a feeling of organic unity throughout the enclosed spaces, and its exterior has a reticence combined with a bold exploitation of modern techniques which is admirable.

The design submitted by Mr. Clifford G. Foreman, of Homestead, Pennsylvania, shows competence in the organization of facilities but seems a little complex in its outward forms for so small a building.

The design of Mr. Edward Fearney, of Gainesville, Florida, held the jury's attention for a considerable period of time, and his design was considered one of the most original and daring among those submitted — especially in its management of flowing space — but as a whole it lacked those practical qualities which were obviously essential to the program.

The design submitted by Mr. Spero Paul Daltas, of Boston, is that of a man who is especially sensitive to spatial values; and that of Mr. George Rafferty, of St. Paul, pleased the jury by its clarity in plan, organization and exterior expression.

Elnor M. Hoops, of Pontiac, Michigan submitted a plan showing very great promise but it was not sufficiently studied; and the design of Mary Ellen Linberger, of Brooklyn, although admirable in directness of organization, was held to be somewhat too Spartan in exploitation of exterior elements.

The design of James V. Hirsch, of St. Paul, was much too busy in plan for so simple a building, giving on the exterior an effect more suited to a commercial building than a building devoted to civic use.

It was the feeling of the jury that the Museum of Modern Art and the ARCHITECTURAL RECORD have rendered an important service to the architectural profession in the conduct of this competition, which was in every way exceptionally well managed. We hope that the experiment will be repeated frequently.

A Few Thoughts about the Hidden Talent Competition

By Eero Saarinen

I would like to add a few thoughts to the Jury's report. It seems to me that the outcome of the competition can be taken as a statement that there are certain aspects of architecture that should be emphasized—simplicity, the need for an over-all concept in a building, a clear structural system, and, in some cases, the need for a certain formality. I wholeheartedly concur with this, but I also can see the danger in an emphasis on these aspects too early in the design of the building. One runs the risk of designing from the outside in. I therefore would like to emphasize the one thing that is fundamental in any of these expressions of architecture: whatever the expression may be, its roots should be in life itself—the way the building is used and a love for the people who use it.

To illustrate what I mean, I would like to focus on one plan. In my opinion, the plan by Clifford G. Foreman has these qualities to a high degree, I think more so than many placed higher than his. His plan is a clean, simple, unsophisticated plan, and one can tell that he understands the life and the problems around a community building as they occur in actual life. One can tell that, while designing the building, he imagined himself entering the building and using the lounge, the game room, etc. In a community house, there is the problem of both separation and concentration. Small committees and meetings need to be closed off; but for other occasions, such as dances, much of the space should be thrown together. Mr. Foreman has understood this part of the problem well. Office, coat room, fireplaces, storage spaces, toilets, etc., are all located well in relation to the normal activities of the community house. Perhaps the only criticism I have is the location and size of the kitchen. A larger kitchen located to serve one or two of the small rooms as well as the auditorium pleases many a sewing circle. While cost was not a limitation of the program, still we cannot divorce economy from architecture. I think it is to Mr. Foreman's credit that he did not embark upon an extravagant solution. Few communities could afford anything but a modest solution; and if they could, they would add more usable space instead of architecture. It is unfortunate that the over-all mass of the building, as well as its exterior treatment with too complicated roofs, is not up to the standard of the very livable, honest plan.

I am not writing this in the spirit of a minority report, because we were all pretty much in agreement on the Jury. I am writing it more as a postscript on my thinking about the competition.

E. S.

HIDDEN TALENT COMPETITION WINNERS

FIRST PRIZE

Joseph Yusuru Fujikawa
Chicago, Ill.

SECOND PRIZE

G. Lee Everidge
Oklahoma City, Okla.

THIRD PRIZE

Edward Chase Weren
Bloomfield Hills, Mich.

HONORABLE MENTIONS

Herbert S. Johnson
Gainesville, Fla.

William R. Reed
Chicago, Ill.

Louis F. Mammier
Brooklyn, N. Y.

Clifford G. Foreman
Homestead, Pa.

Edward M. Fearney
Gainesville, Fla.

Spero Paul Daltas
Boston, Mass.

George E. Rafferty
St. Paul, Minn.

Elnor M. Hoops
Pontiac, Mich.

Mary Ellen Linberger
Brooklyn, N. Y.

James V. Hirsch
St. Paul, Minn

ADDITIONAL PRIZES

Arthur C. Giorchino
New York, N. Y.

James Philip Storm
San Francisco, Cal.

Jules Gregory
New York, N. Y.

Jules Gregory
New York, N. Y.

John David Parrish
New Orleans, La.

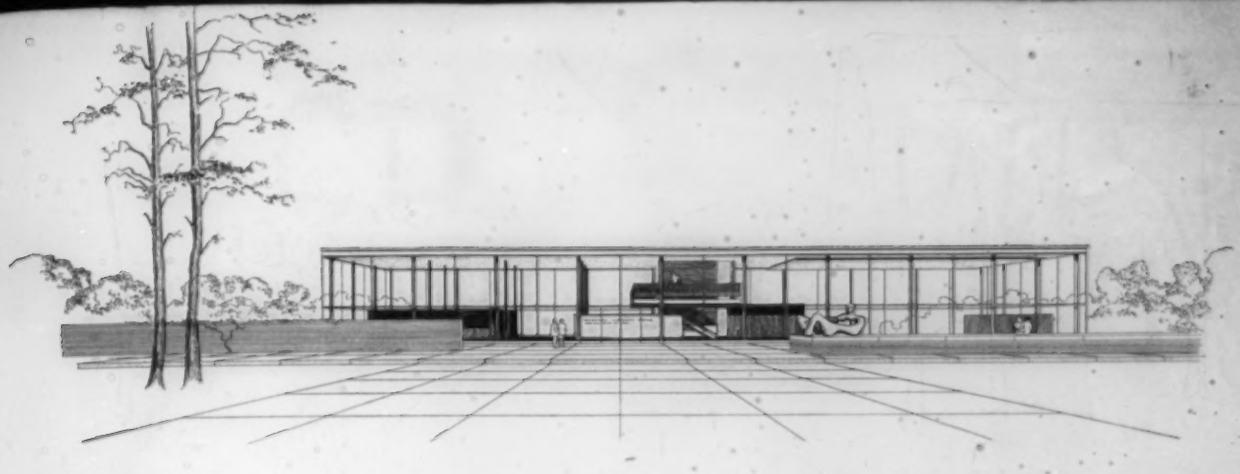
Claude M. Pendley, Jr.
Austin, Tex

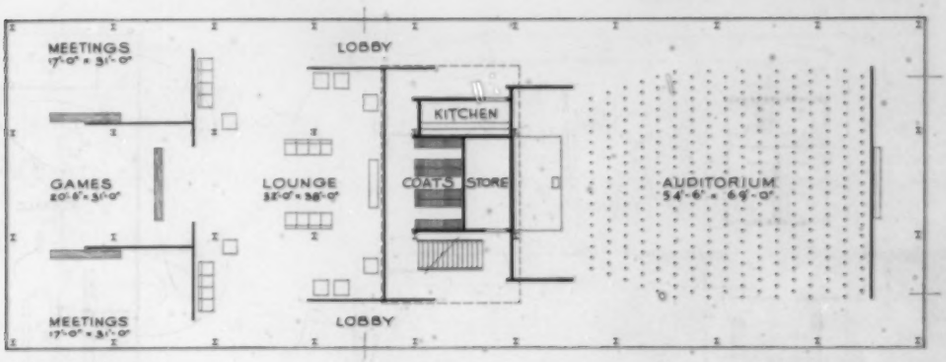
Charles A. Woehrl, Jr.
Knoxville, Tenn.

Harold C. Rose
Gainesville, Fla.

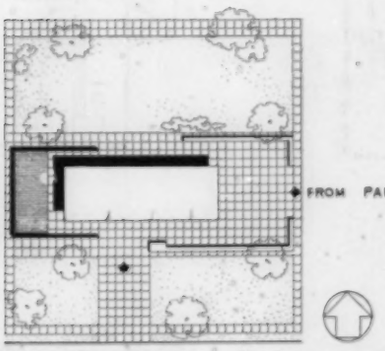
Vanu Gopalji Bhuta
Bloomfield Hills, Mich.

James H. Hofmann
Oakland, Cal.

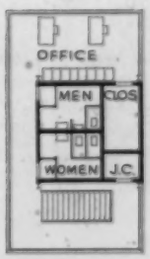




MAIN FLOOR

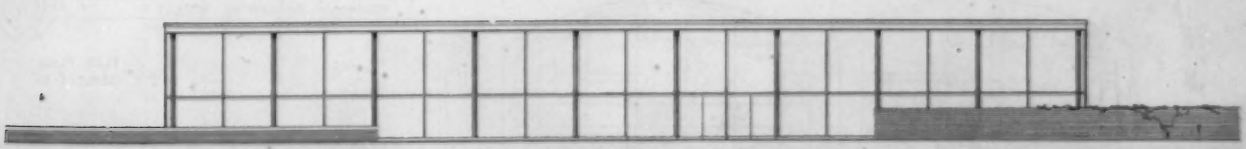


PLOT PLAN



MEZZANINE

SECTION

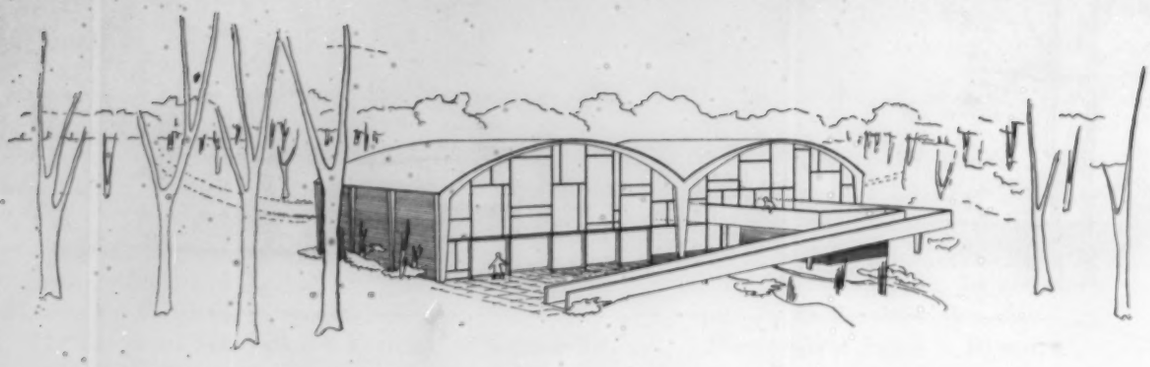


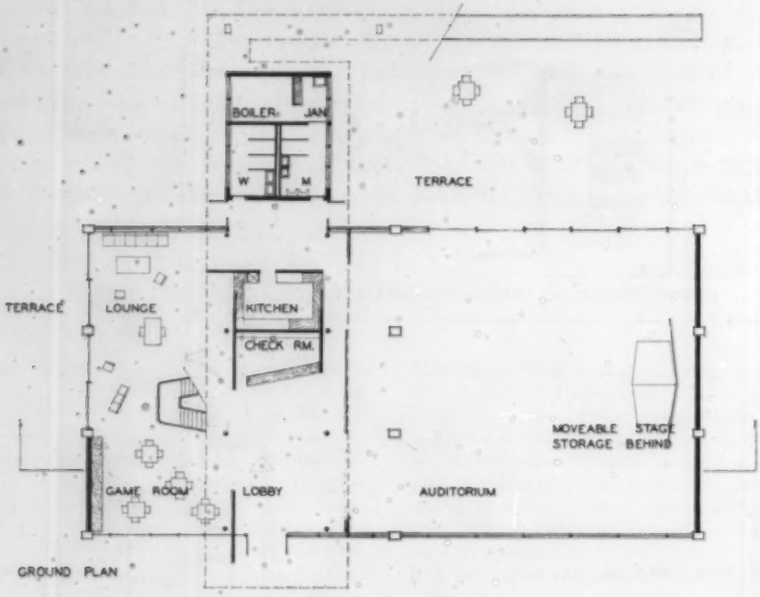
NORTH ELEVATION

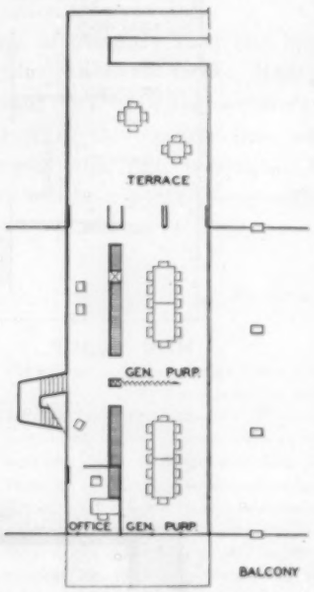
FIRST PRIZE: $1000.00

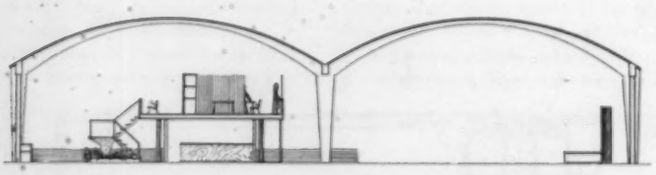
Joseph Y. Fujikawa, *Chicago, Illinois*

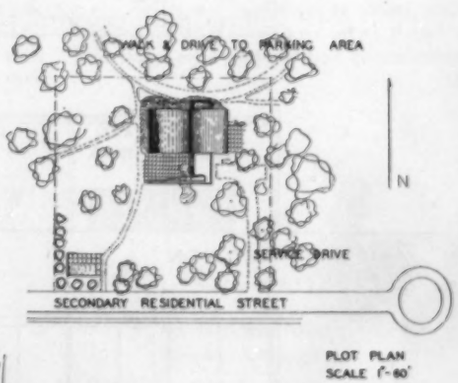
Born in 1922, attended the University of Southern California 1939–42, and then went to Illinois Institute of Technology where he received his degree B.S. in Architecture in 1944. He served in the United States Army 1944–45 and since 1946 has been in the office of Ludwig Mies van der Rohe, and also has been doing graduate work at Illinois Tech.

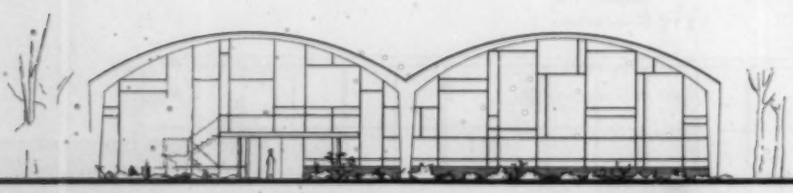








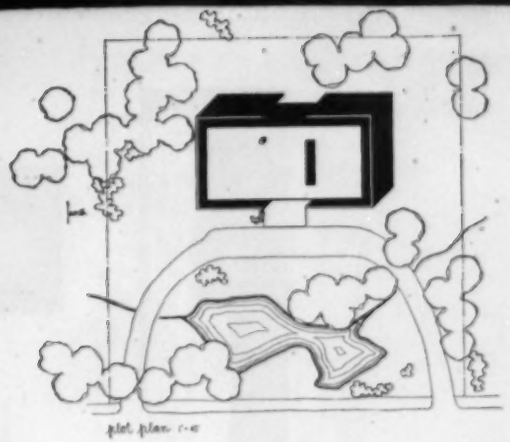




SECOND PRIZE: $750.00

G. J. Lee Everidge, *Oklahoma City, Okla.*

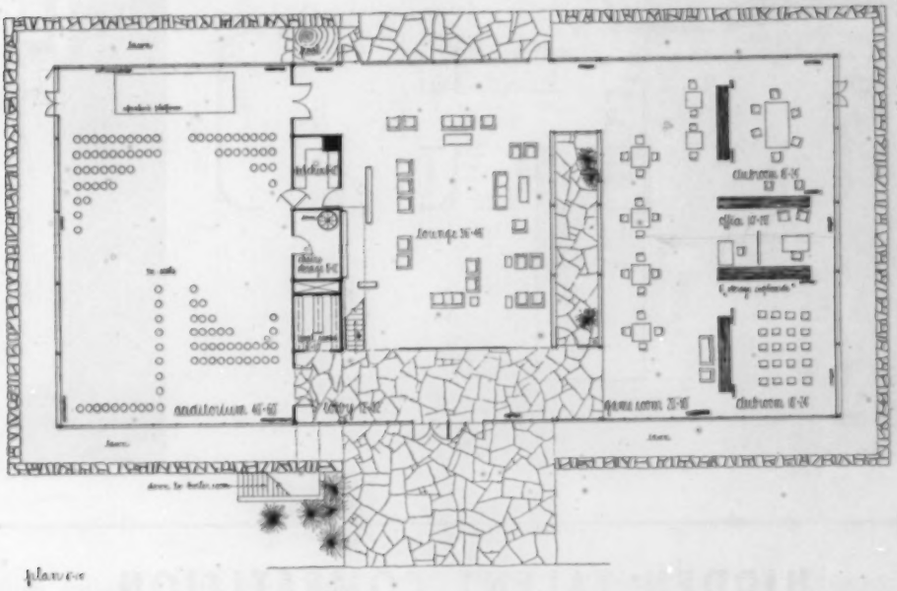
Of part Choctaw Indian descent, he was born in Oklahoma in 1926; studied architecture at University of Oklahoma 1943. After serving in the Army Air Corps 1944–45, returned to University of Oklahoma, then moved to North Carolina State College to continue his studies with the same faculty which went to organize the new School of Design at North Carolina



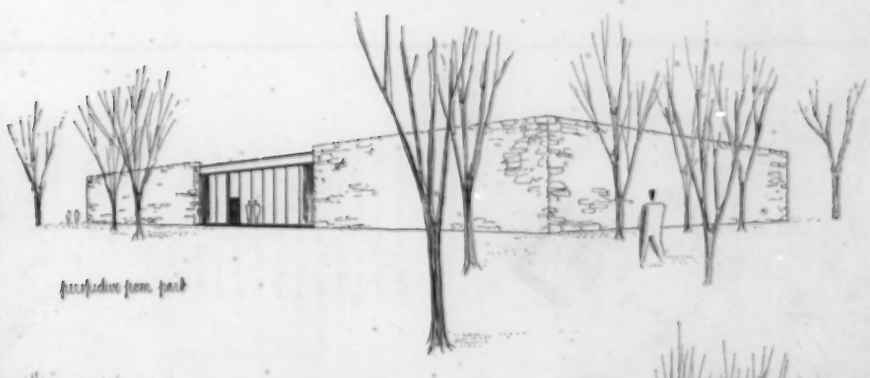
plot plan 1"=40'

section through auditorium

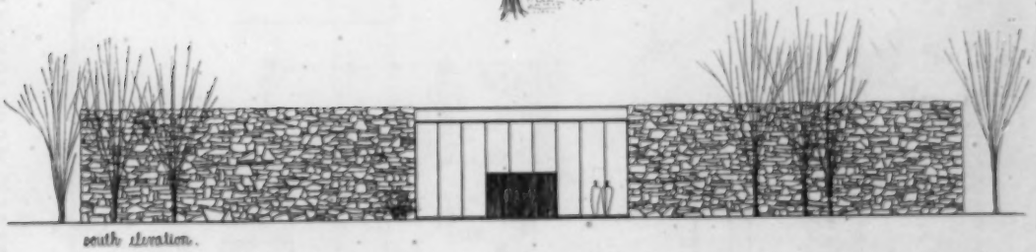
upper level plan
division 1"=8'



plan 1"=8'



perspective from park

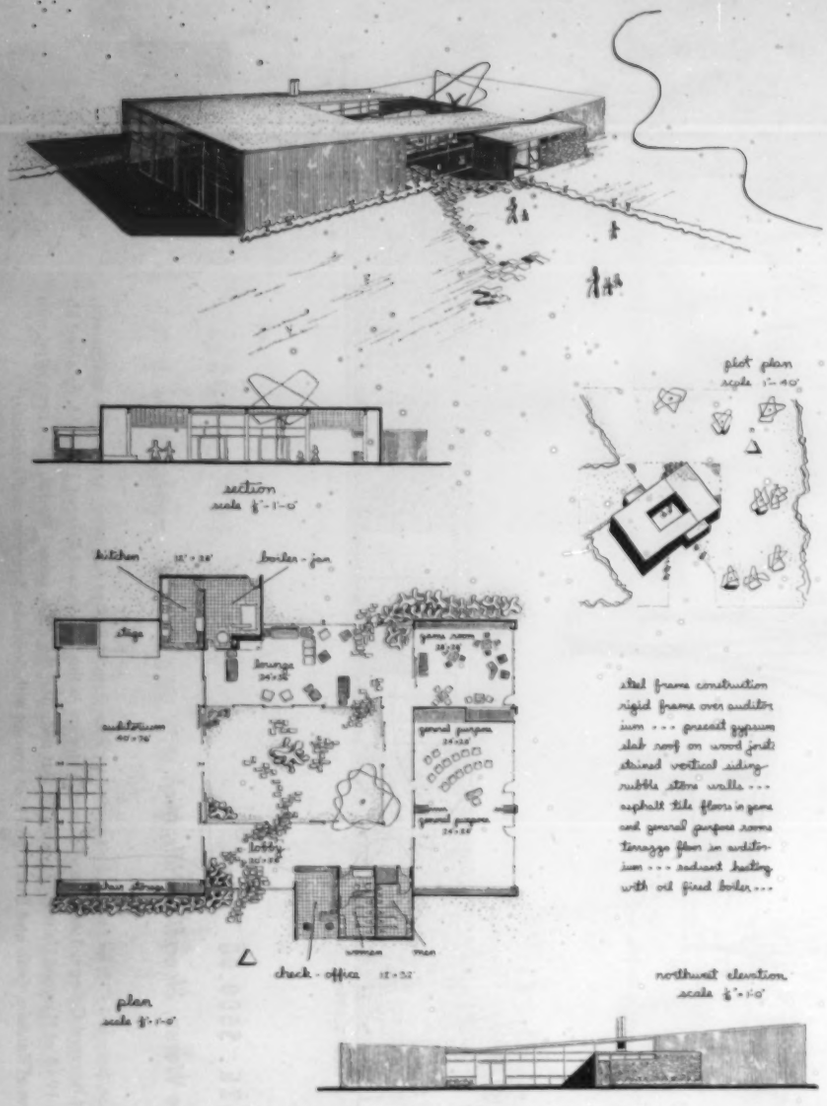


south elevation

THIRD PRIZE: $500.00

Edward Chase Weren, *Bloomfield Hills, Mich.*

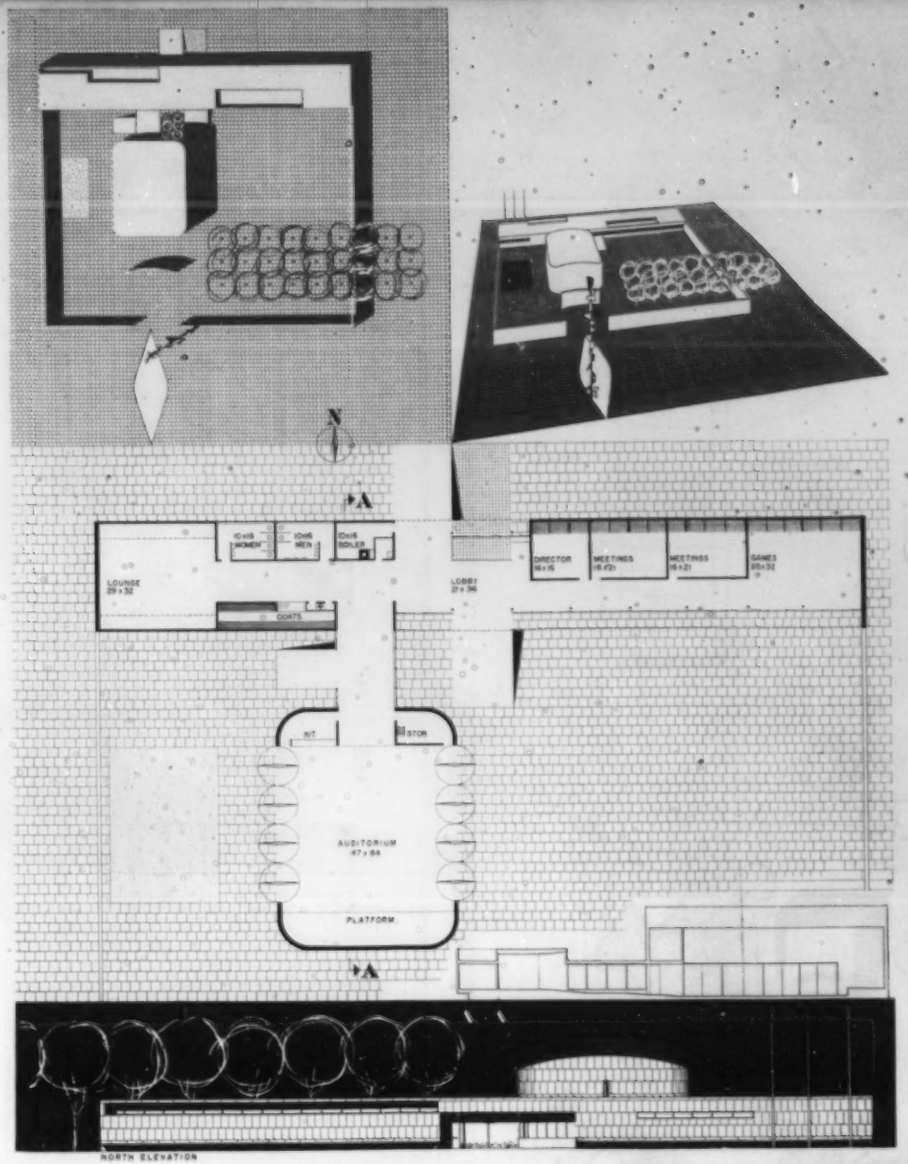
A native New Yorker, born in 1920, he received his secondary education at Phillips Academy, Andover, Massachusetts, received his A.B. at Harvard College, 1942. Served as a lieutenant in the U. S. Naval Reserve 1942–46, received his degree of B. Arch. 1948 at Harvard University where he was awarded the A.I.A. School Medal. Was associated with the architectural firm of Ketchum, Gina and Sharp, and is at present with Saarinen, Saarinen and Associates



HONORABLE MENTION: $50.00

Herbert Johnson. Born in Chicago 28 years ago, he attended Chicago Latin School, and the Asheville School, Asheville, North Carolina, before entering the University of Florida, College of Architecture and Allied Arts. He served three years with the Seabees in both European and Pacific Theaters of the war, married, and returned to the University of Florida in 1946.

HIDDEN TALENT COMPETITION

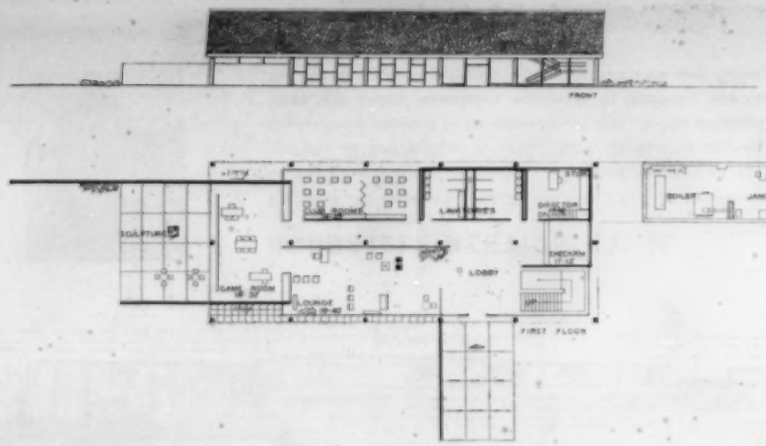


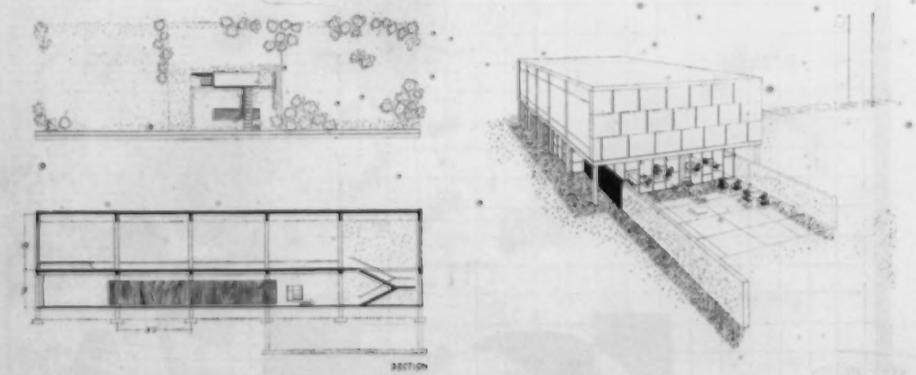
HONORABLE MENTION: $50.00

William R. Reed. Moved from Cincinnati where he was born in 1922, to Chicago in 1930, where he later entered the American Conservatory of Music. He attended Harvard University, 1940, the Institute of Design, 1941, and served with the Army Air Force from 1943–46. He is associated with Robert Bruce Tague, A.I.A., and is currently remodeling a Chicago building as his office

to the University of Florida in 1946.

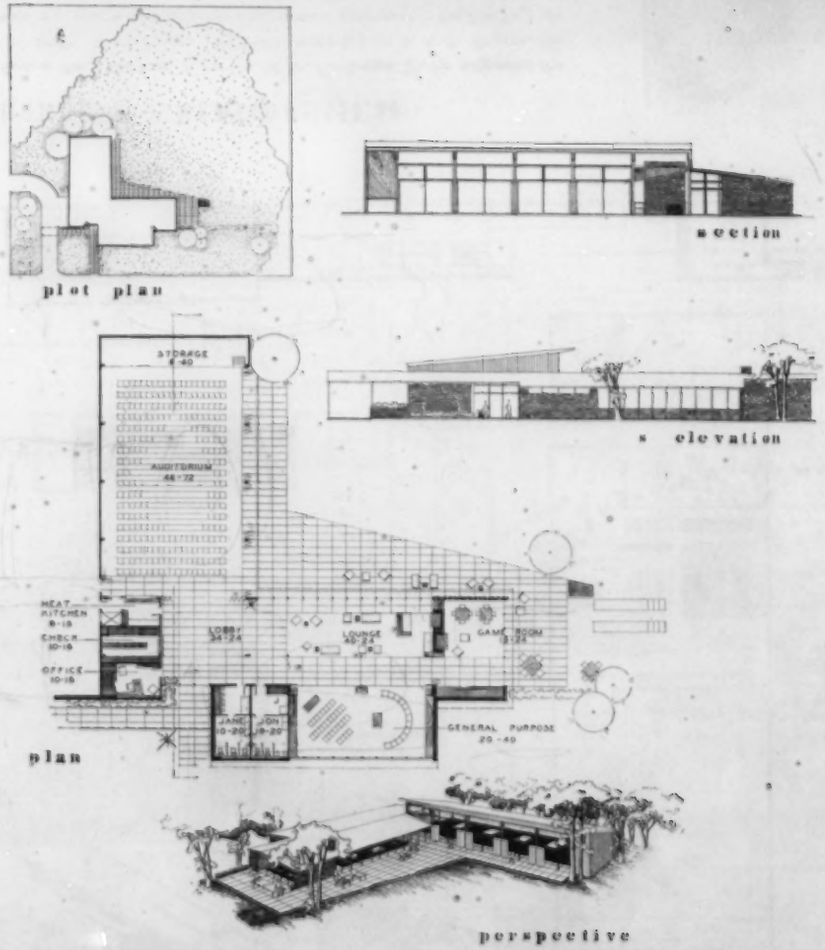
currently remodeling a Chicago building as his office





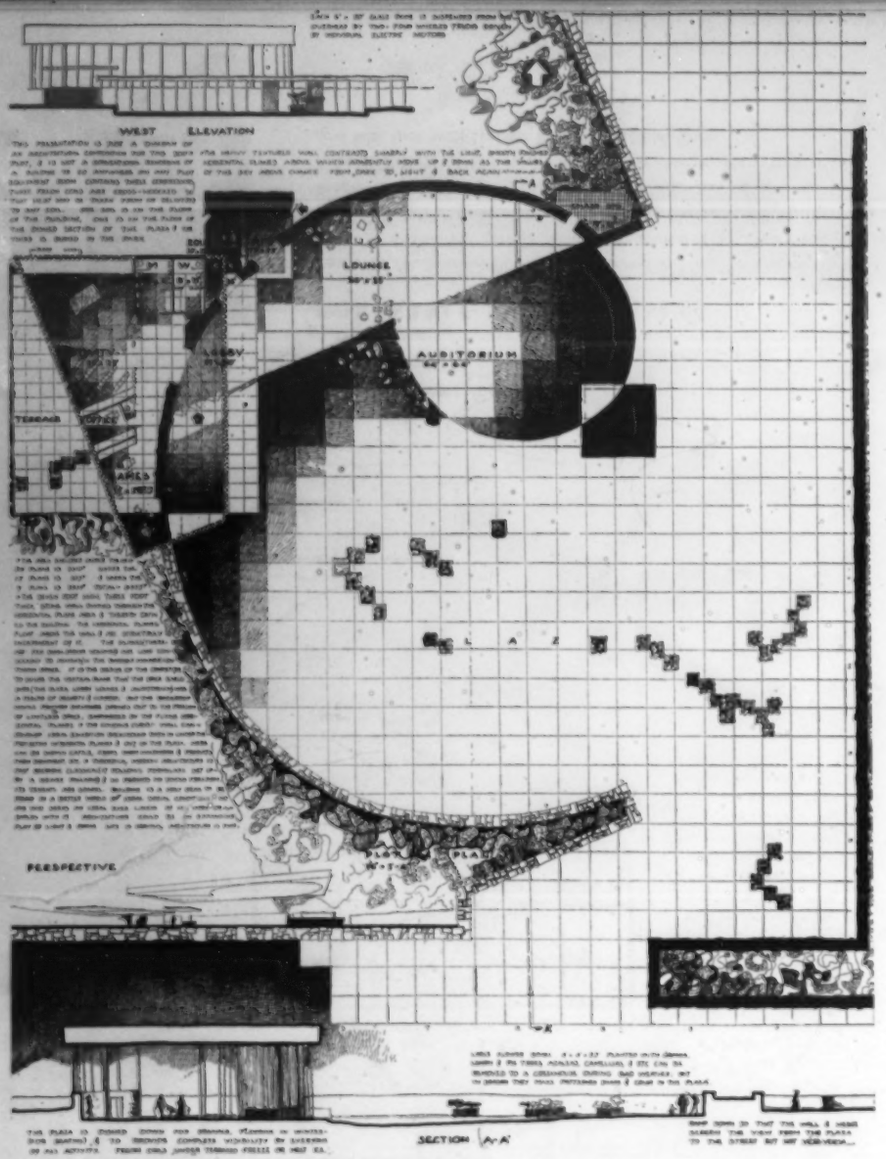
HONORABLE MENTION: $50.00

Louis F. Mammier. Born and educated in New York state (son of Louis E. Mammier, architect), he graduated from Pratt Institute, Brooklyn, with degree of B. Arch. in 1948. He received 1st prize in Brooklyn A.I.A. Design Competition, 1947. He served with the U. S. Area Engineers at Steward Air Field, Newburgh, New York; and is now with architects Lorimer Rich and Robbins Conn

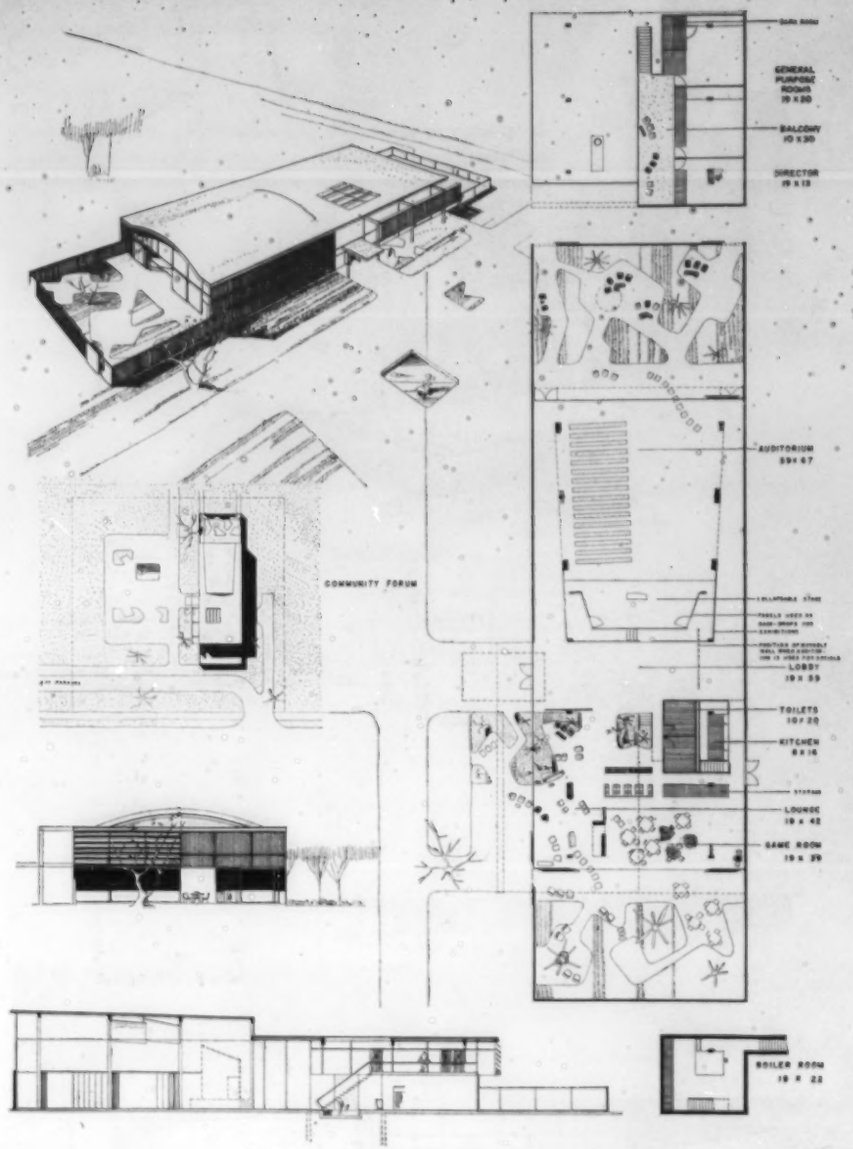


HONORABLE MENTION: $50.00

Clifford G. Foreman. A Pennsylvanian, born in 1926 in Pittsburgh, he received his secondary education in Homestead, Pennsylvania, and is now a student in the Department of Architecture of Carnegie Institute of Technology



HIDDEN TALENT COMPETITION

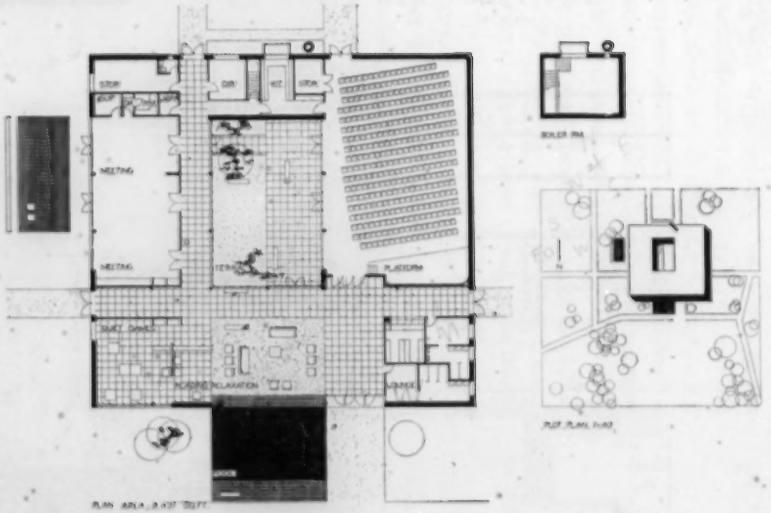

GENERAL PURPOSE ROOMS 19 X 20
BALCONY 10 X 30
DIRECTOR 19 X 13
AUDITORIUM 59 X 67
COMMUNITY FORUM
LOBBY 19 X 59
TOILETS 19 X 20
KITCHEN 8 X 16
LOUNGE 19 X 45
GAME ROOM 19 X 39
BOILER ROOM 19 X 22

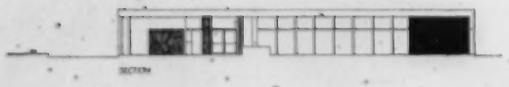
HONORABLE MENTION: $50.00

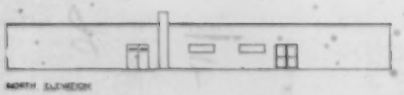
Edward M. Fearney, A.I.A. Born in 1915 in Providence, Rhode Island, he attended Brown University, but transferred to Carnegie Institute of Technology, B. Arch. 1939. Served as Marine Aviation Cadet, and worked in Newfoundland and on the Alaska Highway. Was with Dickey Associates, Architects, in Honolulu; now teaching in the University of Florida, College of Architecture and Allied Arts

HONORABLE MENTION: $50.00

Spero Paul Daltas. A native of St. Paul, age 28, he attended the University of Minnesota 1938–43, receiving his B. Arch. degree. He was a gunnery and torpedo officer on a destroyer in the Pacific from 1943–46, was an architectural designer for Northwest Airlines 1946–47, received M. Arch. at M. I. T. in 1948, where he won the Chamberlain Prize. Now with Carl Koch and Associates, Cambridge, Mass

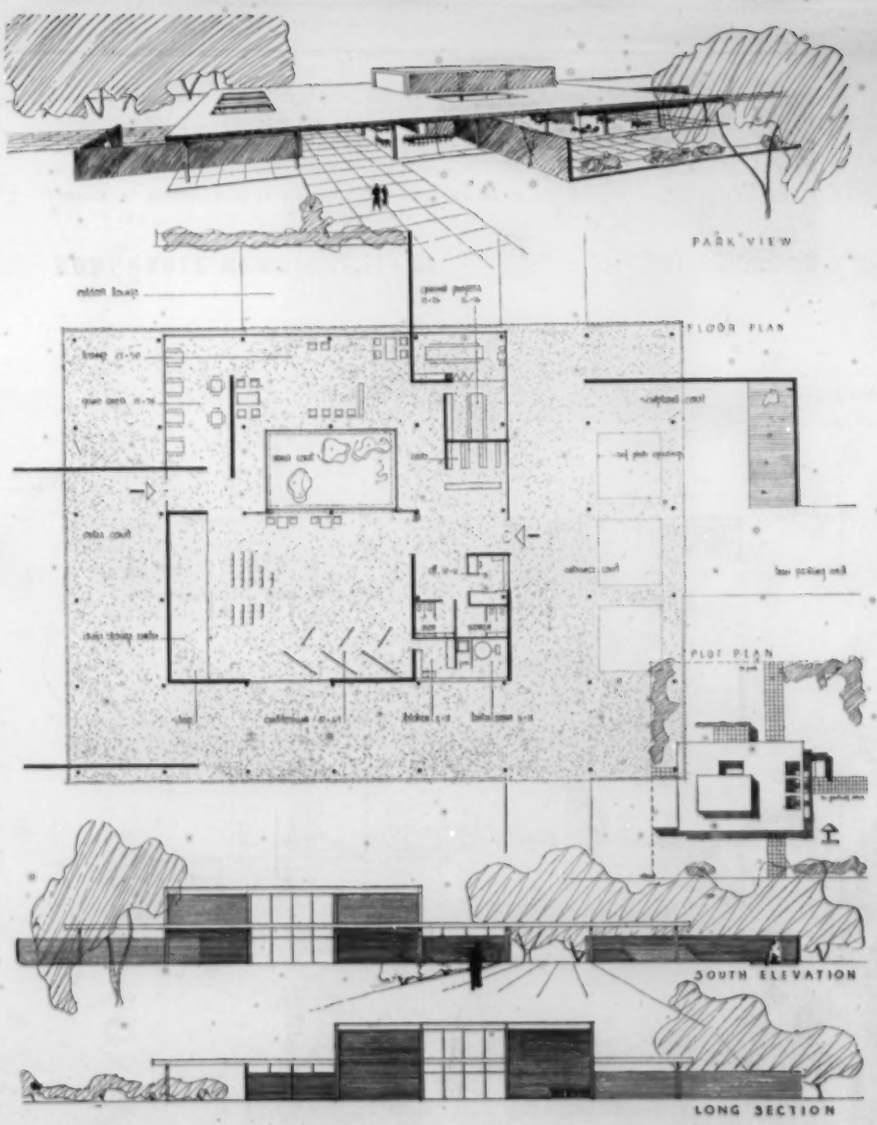






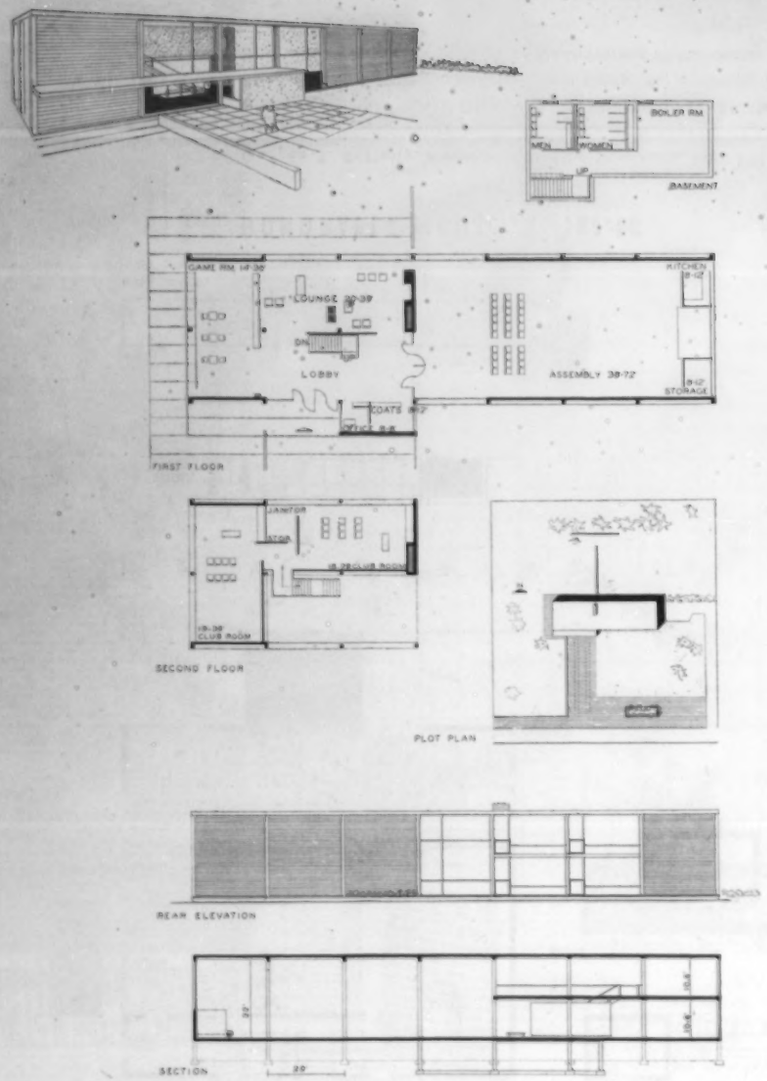
HONORABLE MENTION: $50.00

George E. Rafferty. A native of St. Paul, Minnesota, born 1917, he graduated in architecture at the University of Minnesota 1942. He was a sergeant in the Air Corps and an instructor 1942–46. He is a designer with Ingemann, Bergstedt, and Cavin, Jr., architects, in St. Paul, and an instructor in design at the University of Minnesota



HONORABLE MENTION: $50.00

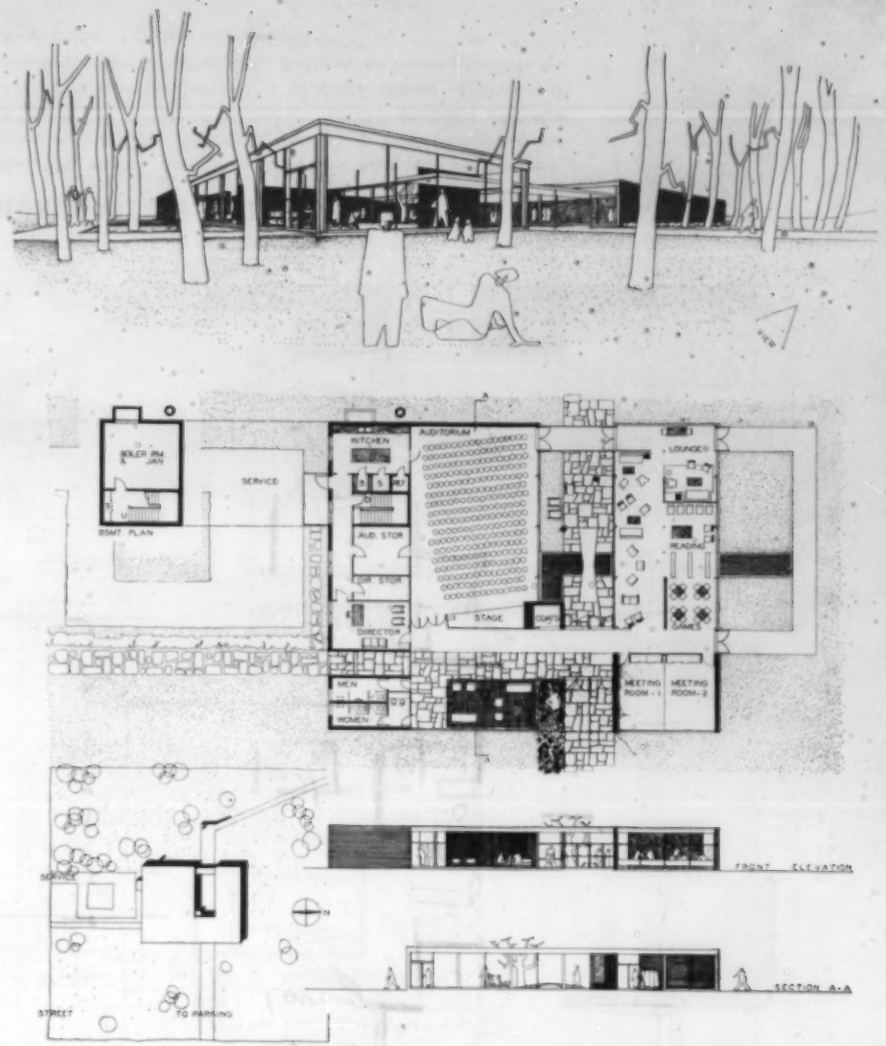
Elnor M. Hoops. Born in Brooklyn, New York, in 1924, she graduated from Middlebury College, Vermont, in 1946, having majored in liberal arts. Though she has had no formal architectural education she shares with her husband, a graduate student at Cranbrook Academy of Art, Bloomfield Hills, Michigan, an intense interest in the development of modern architecture



HONORABLE MENTION: $50.00

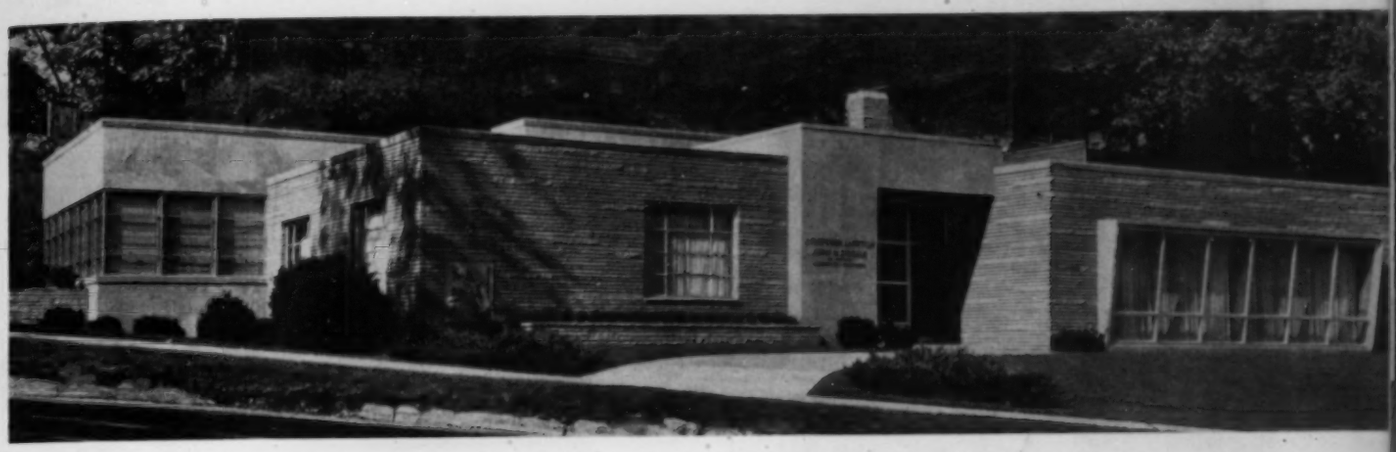
Mary Ellen Linberger. In 1926 she was born in Youngstown, Ohio. She took the liberal arts course at Rosary College, River Forest, Illinois, 1943–45, before going to Pratt Institute, Brooklyn, where she is now a senior in the department of architecture. She received the Pratt Alumni award, "outstanding junior student", 1948, and received an honorable mention in the New York State Housing Competition 1948

HIDDEN TALENT COMPETITION



HONORABLE MENTION: $50.00

James V. Hirsch. Born in Medford, Wisconsin 25 years ago, he studied at the University of Minnesota, graduating with distinction in 1947 with a degree B. Arch. He served in Europe as a sergeant in the Infantry 12th Armored Division 1943–46, and is now a designer with Ingemann, Bergstedt and Cavin, Jr., of St. Paul, Minnesota



ARCHITECT-ENGINEER OFFICES, PEORIA, ILLINOIS

Office Building of J. Fletcher Lankton

John N. Ziegele and Associates

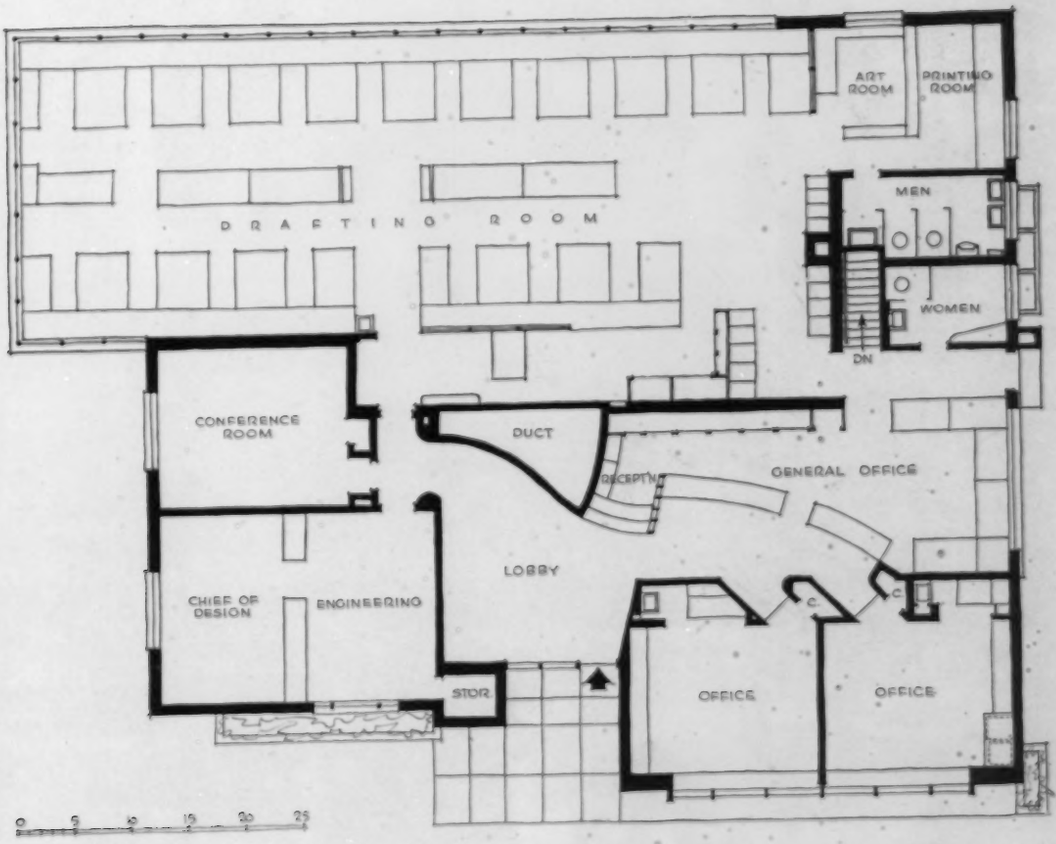
Architects and Engineers

When this architectural firm expanded to the point of designing its own building, it chose an outlying site, about a mile from the center of the city, on a fairly prominent hillside. The building is placed to be seen from a considerable distance, and is floodlighted at night. The building was designed to provide exceptionally good working conditions for a total personnel of 36; besides 8 architects, there are 5 licensed engineers, 18 draftsmen and superintendents, a delineator and 4 stenographers or accountants, including as a not-unimportant part of the facilities, parking space for the employees' cars. Scruggs and Hammond were the landscape architects. The heating and air conditioning system includes several innovations, some experimental. Heating combines radiant heating with forced warm air, permitting a large volume of ventilating air to be circulated. The duct work is divided into two zones, so that different exposures may be separately heated or cooled. To reduce water consumption in the cooling period, an evaporative condenser was installed with the compressor. Dehumidification is exceptionally important for hot Illinois weather, especially in a drafting room, where humidity hampers drawing. Air handling equipment can supply 100 per cent fresh air, when weather conditions are propitious. A tri-ethylolene vaporizer is installed in the ventilation system on an experimental basis, in the belief that it may cut down absenteeism due to colds. The architects point out that it frequently has had this result. So far, however, no definite conclusions have been reached regarding its effectiveness in this particular office.

Exterior is of Indiana limestone, backed with insulating concrete block. Large pieces of stone are shot sawed: ashlar is of long pieces of two different thicknesses

Drafting room walls are the concrete blocks, painted with two coats of resin emulsion paint: in other rooms the block is plastered and painted. All ceilings are acoustic tile; floors are rubber tile, except in executive offices where carpet is used. The basement contains, besides air conditioning equipment, a model shop, dead files, and an employees' lunch room, where the coffee making equipment is always much appreciated

Above: view of reception room, looking toward entrance; Right: conference room. Below: general office, looking toward receptionist's desk and waiting room. Indirect lighting of the display renderings is effectively arranged in connection with the cabinets


ART ROOM
PRINTING ROOM
DRAFTING ROOM
MEN
WOMEN
DN
CONFERENCE ROOM
DUCT
RECEPTN
GENERAL OFFICE
LOBBY
CHIEF OF DESIGN
ENGINEERING
STOR
OFFICE
OFFICE
C
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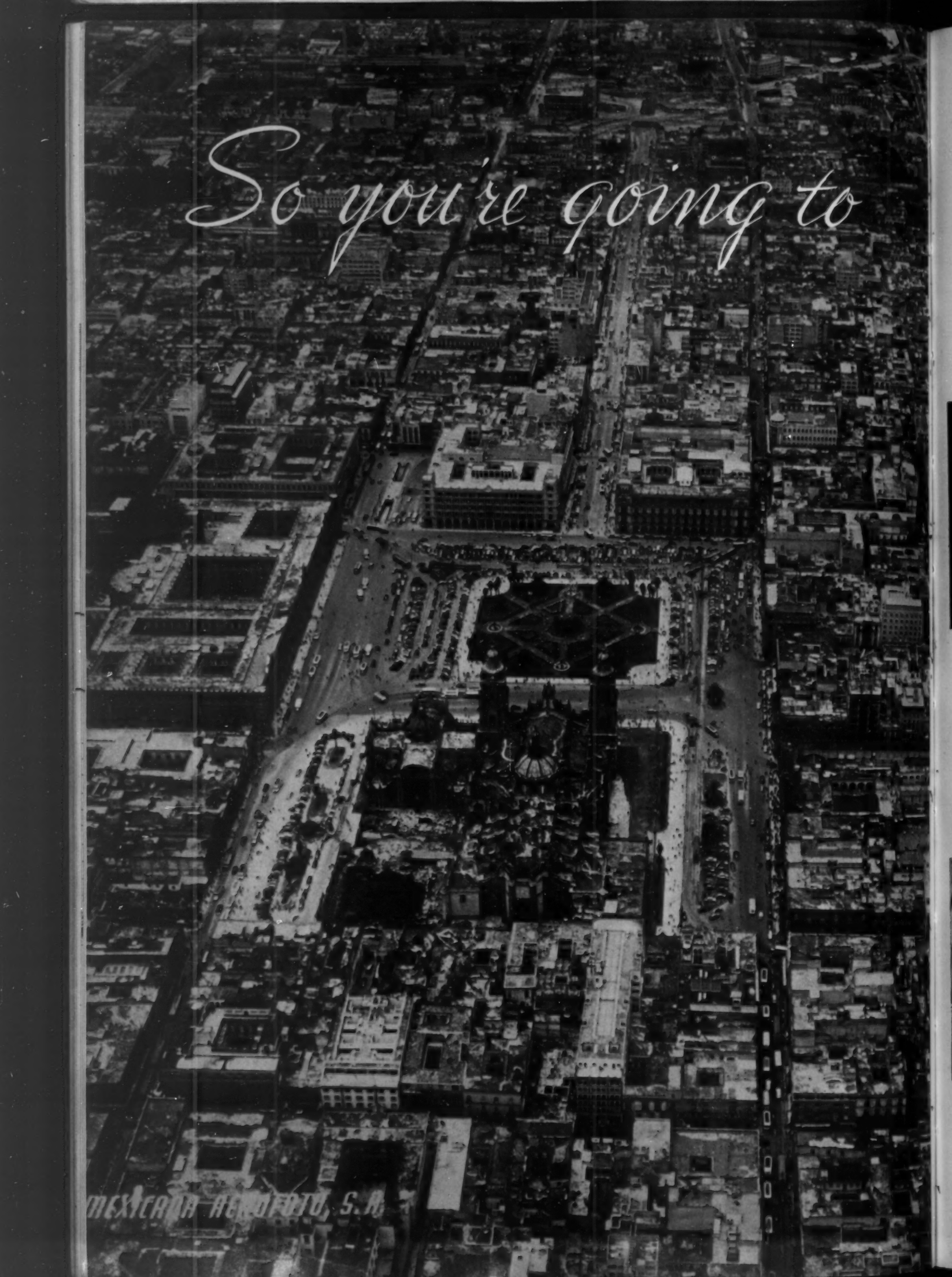
25


So you're going to

MEXICO

. . . or at least Mexico City where much modern architecture has bloomed against the rich background of former periods. So here are a few candid shots of recent buildings and a decorative and useful map (overpage) showing their locations and other points of interest, prepared by Susanne Wasson-Tucker especially for ARCHITECTURAL RECORD and your edification

1

**Office Building,
Victor de la Lama, Architect**

3

Hotel Prado (opened 1948, 660 rooms), Carlos Obregon Santacilia, Architect

6 **4**

**Left, Office Building, Pani & del Moral, Architects.
Right, Office Building, Mario Pani, Architect**

5

Office Building for Eastern Airlines, Juan Sordo Madaleno & Augusto Alvarez, Architects (1947)

Numbers refer to locations indicated on the map (overpage)

6

**Office Building,
Mario Pani and Enrique del Moral, Architects**

7

Office Building "Edificio Continental," Carlos Lazo, Architect (1948)

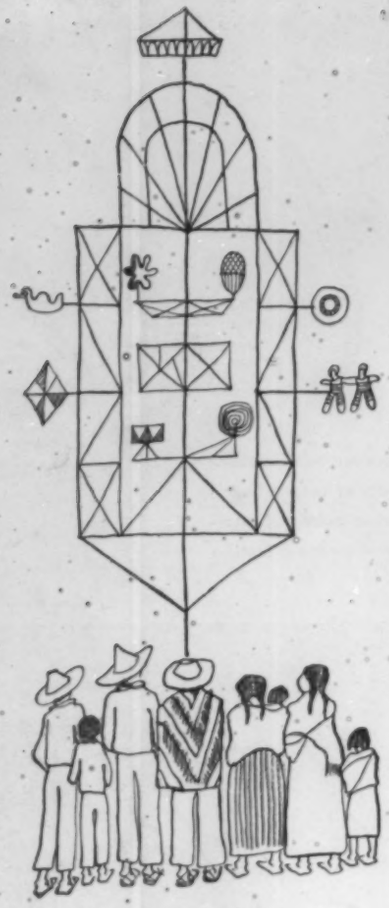
8

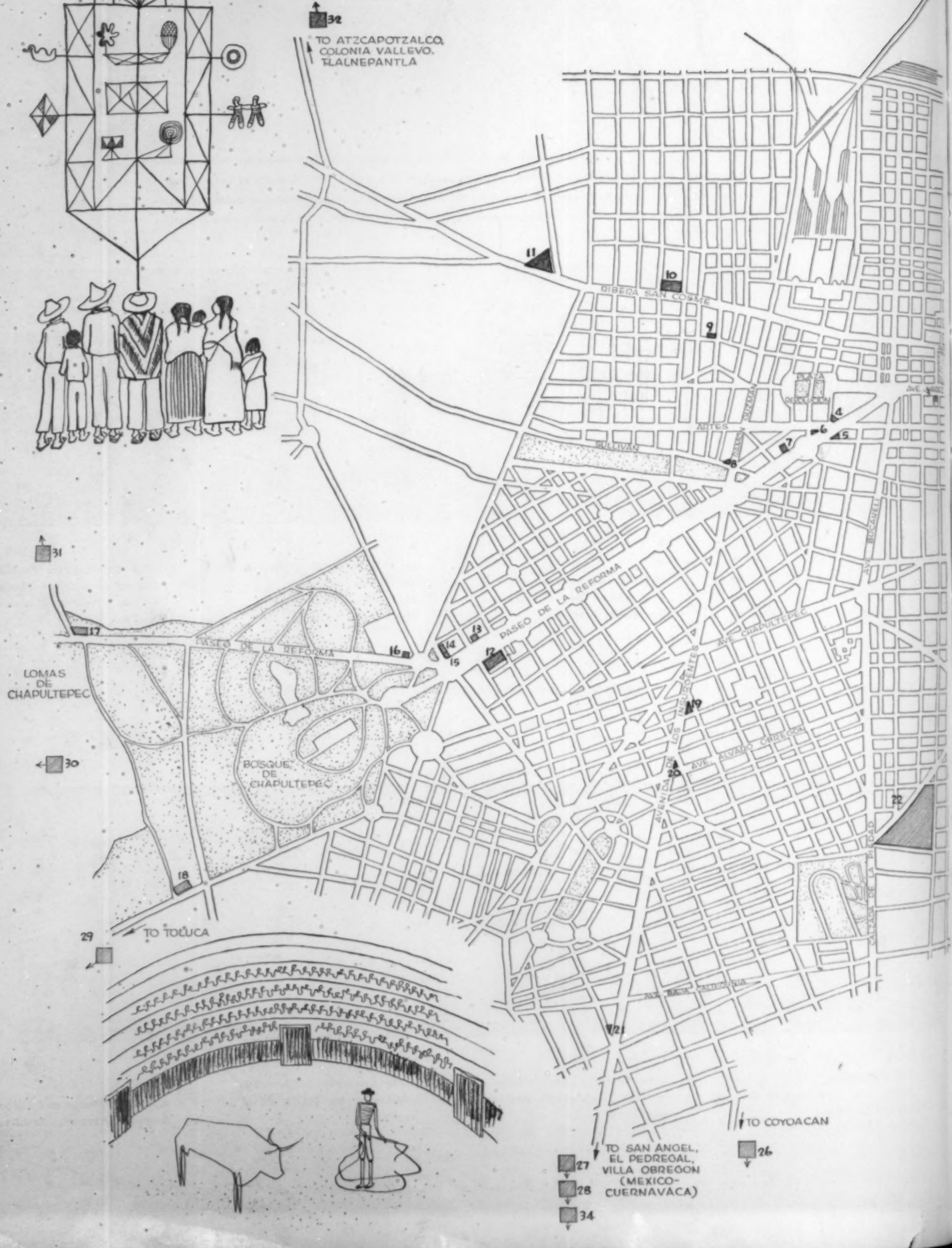
Hotel (partially hidden by billboards) by Mario Pani, Architect

9

Apartment House and Shops, Augusto Alvarez, Architect

See also "Modern Mexico," by Ann Binkley Horn, ARCHITECTURAL RECORD, July 1947, pp. 70–83.




32
TO ATZCAPOTZALCO, COLONIA VALLEVO, TLALNEPANTLA
11
10
RIBERA SAN COSME
9
ARTES
SULLIVAN
4
5
6
7
8
31
17
PASEO DE LA REFORMA
16
15
14
13
12
PASEO DE LA REFORMA
LOMAS DE CHAPULTEPEC
30
BOSQUE DE CHAPULTEPEC
AVE. CHAPULTEPEC
19
20
AVE. ALVARO OBREGON
22
18
29
TO TOLUCA
21
TO COYOACAN
TO SAN ANGEL, EL PEDREGAL, VILLA OBREGON (MEXICO-CUERNAVACA)
27
28
34
26

Map and sketches drawn by Susanne Wasson-Tucker

KEY TO PLAN

LIST OF BUILDINGS

1. * Office Building
   Victor de la Lama, Architect
2. * Office Building, 37 stories high
   Augusto Alvarez, Architect
3. Hotel Prado (opened 1948)
   Carlos Obregon Santacilia, Architect
4. * Office Building
   Mario Pani, Architect
5. Office Building, Eastern Airlines
   J. S. Madaleno & A. Alvarez, Arch'ts.
6. * Office Building, Mario Pani & Enrique del Moral, Architects
7. Office Building "Edificio Continental"
   Carlos Lazo, Architect (1948)
8. Hotel, Mario Pani, Architect (1948)
9. Apartment House and Shops
   Augusto Alvarez, Architect (1948)
10. Students Center "San Cosme"
    Enrique Yañez, Architect (1947)
11. Normal School for Teachers
    Mario Pani, Architect (1947)
12. * Social Security Building
    Carlos Obregon Santacilia, Architect
13. * Hotel
    Ingenieros Associados, Architects
14. * Office Building
    Ramos Marcos, Architect
15. Apartment House
    Juan Sordo Madaleno, Architect
16. Apartment House
    Juan Sordo Madaleno, Architect
17. National Conservatory of Music
    Mario Pani, Architect (1947)
18. Center for Mothers and Infants
    Enrique de la Mora, Architect (1947)
    (ARCHITECTURAL RECORD, August 1947)
19. Office Building (1947)
    J. S. Madaleno & A. Alvarez, Arch'ts.
20. Office Building (1947)
    J. S. Madaleno & A. Alvarez, Arch'ts.
21. Apartment House
    Juan de Madariaga, Architect (1947)
22. Medical Center of the City of Mexico:
    Childrens Hospital and
    Cardiological Institute (1948)
    José Villagrán Garcia, Architect
    * Emergency Pavilion
    Mario Pani, Architect
23. Malt Factory
    Fernando Cervantes, Architect
24. Film Studios, Churubusco
    Gil Robles, Architect (1946-48)
25. Tuberculosis Sanatorium (1948)
    José Villagrán Garcia, Architect
26. * Housing Project, Apartments
    Mario Pani, Architect
27. Bull Ring and Stadium
    M. Roland, Engineer in charge
28. Garden and Residences, Pedregal
    Luis Barragan, Architect
    Hill House, Max Cetto & John McAndrew, Architects (1947)
    * House of Architect Max Cetto
29. Turf Club, Km 12 Road to Toluca
    "Artecnica", Architects (1947)
30. Lomas de Chapultepec, Residence
    Carlos Lazo, Architect
31. Military Hospital
    Luis MacGregor, Architect
32. Industrial Area, Atzcapotzalco and Colonia Vallejo, Factory "Crown Cork de Mexico," Gonzalez Reyna & Arozarena, Architect (1949)
    * Textile Factories
    Gonzalez Reyna & Arozarena, Arch'ts.
33. Industrial Development, Factories, Housing, Recreation
    Industria Nacional S.A., Ruiz Gallardo
34. Residence of
    Augusto Alvarez, Architect

10

Students' Center, "San Cosme," Enrique Yañez, Architect (1947)

11

Normal School for Teachers, Mario Pani, Architect (ARCHITECTURAL RECORD, July 1947)

12

Social Security Building, Carlos Obregon Santacilia, Architect

13

Hotel by Ingeniors Associates, Architects

14

Office Building, Rámon Marcos, Architect

15

Apartment House, Juan Sordo Madaleno, Architect

16

Apartment House, Juan Sordo Madaleno, Architect

22-A

Medical Center of the City of Mexico: Children's Hospital, José Villagrán García, Architect (ARCHITECTURAL RECORD, October 1944)

22-B

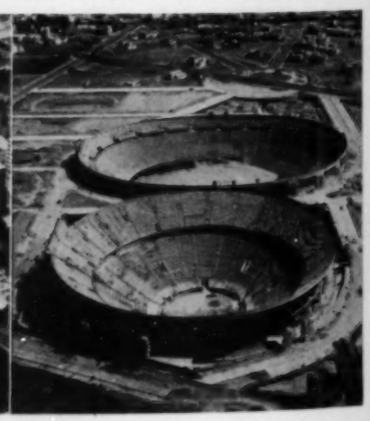
Medical Center of the City of Mexico: Cardiological Institute, José Villagrán García, Architect (1948)

23

Malt Factory, Fernando Cervantes, Architect (1945–48)

26

Housing Project, Apartment Group, Mario Pani, Architect



27

Bull Ring and Stadium, M. Roland, Engineer in charge

28

Hill House, Max Cetto and John McAndrew, Architects

30

Residence of Carlos Lazo, Architect, Lomas de Chapultepec

32

Factory "Crown Cork de Mexico," Gonzalez Reyna and Arozarena, Architects (1949)

34

Residence, Augusto Alvarez, Architect and owner (1948)

A BRIEF LIST OF SOME OF THE ARCHITECTS AND NEW BUILDINGS IN MEXICO D. F.

AUGUSTO ALVAREZ
Calle de Mississippi 31

Apartment House
Alfonso Herrera 11

Office Building
Paseo de la Reforma and
Avenida Morelos

Office Building
Avenida de los Insurgentes
and Tonalá

Office Building
Avenida de los Insurgentes
and Monterrey

Office buildings while associated with Juan Sordo Madaleno

Own Residence, "San Angel,"
Simon Yarto 11

"ARTECNICA"
Avenida Juarez 88

"Turf Club"
18 Kilometers from the City
on the way to Toluca

LUIS BARRAGAN
Paseo de la Reforma 137

Garden on the Pedregal, and Development of Private Residences
Pedregal

FERNANDO CERVANTES
Avenida Juarez 76

Malt Factory
Calzada de Cuitlahuac and Boturini

MAX CETTO
Avenida Juarez 139
Coyoacan D. F.

Residence
Calle Tornel
Tacubaya

Residence
Guerrero 10
San Angel D. F.
(with John McAndrew)

CARLOS CONTRERAS
Edificio la Nacional 1004
Avenida Juarez No. 4

VICTOR DE LA LAMA
Paseo de la Reforma 1

Office Building
Avenida de Mayo and Condesa

ENRICO DE LA MORA
Avenida Juarez 30

General Hospital,
Medical Center of the City of Mexico
Calzada de la Piedad and Pasteur

Center for Mothers and Infants
Calzada de Madereros and Guernavaca Railroad

ENRIQUE DEL MORAL
Paseo de la Reforma 503

Pavilion for Infectious Diseases,
Medical Center of the City of Mexico
Calzada de la Piedad and Pasteur

Office Buildings
(with Mario Pani)

JUAN DE MADARIAGA
Apartment House
Avenida de los Insurgentes and Chilpancingo

JOSÉ VILLAGRÁN GARCÍA
Calle de Palma 30

Medica Center of the City of Mexico
Calzada de la Piedad and Pasteur

Maternity Pavilion
Children's Pavilion
Cardiological Pavilion

Tuberculosis Sanatorium
Coyoacan

"Costa Rica" School

INDUSTRIA NACIONAL S. A.
Ruiz Galinde

Industrial Development, Housing, Recreation
Guadelupe, Road to Pachuca

CARLOS LAZO
Avenida Sonora 80

Office Building
Paseo de la Reforma, near Paris

Residence
Sierra Leona 374
Lomas de Chapultepec

LUIS MACGREGOR
Military Hospital
Avenida del Castillo
Lomas de Chapultepec

JUAN SORDO MADALENO
Avenida Morelos 110

Apartment House
Paseo de la Reforma and Calzada Gral Mariano
Office buildings, while associated with Augusto Alvarez

MARIO PANI
Paseo de la Reforma 503

Normal School for Teachers
Calzada Mexico-Tacuba and Avenida de los Maestros

National Conservatory of Music
Paseo de la Reforma and Moliere

Emergency Pavilion,
Medical Center of the City of Mexico
Calzada de la Piedad and Pasteur

Hotel
Van Sullivan and Ramón Gutzmán

Office Building
Paseo de la Reforma and Artes

Office Building
Paseo de la Reforma and Francia

Church
Calle de Leibnitz

Housing Project
Avenida Coyoacan and Cuevas

GONZALEZ REYNA and AROZARENA
Avenida Juarez 56

Factory "Crown Cork de Mexico"
Colonia Vallejo

Textile Factories
Atzapozalco

GIL ROBLES
Filmstudios
Calzada de Mexico a Tlalpam
Churubusco

M. ROLAND
Engineer in charge
Bull Ring and Stadium
Avenida de los Insurgentes

CARLOS OBREGON SANTACILIA
Calle Lisboa 22

Hotel Prado
Avenida Juarez and Luis Moya

Social Security Building
Paseo de la Reforma and Toledo

ENRIQUE YAÑEZ
Calle de Emperan 35

Students Center "San Cosme"
Centro Escolar Ribera de San Cosme
Avenida Ribera de San Cosme and Fresno

George P. Turner, Designer

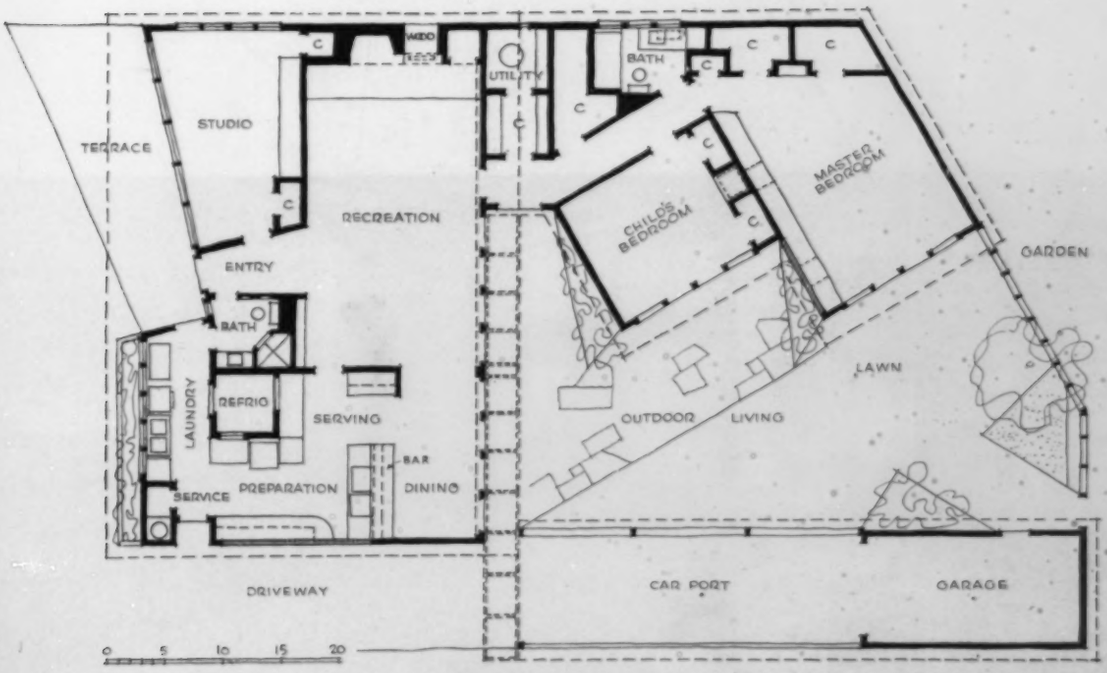
"DESIGN FOR LIVING—WITH KIDS"

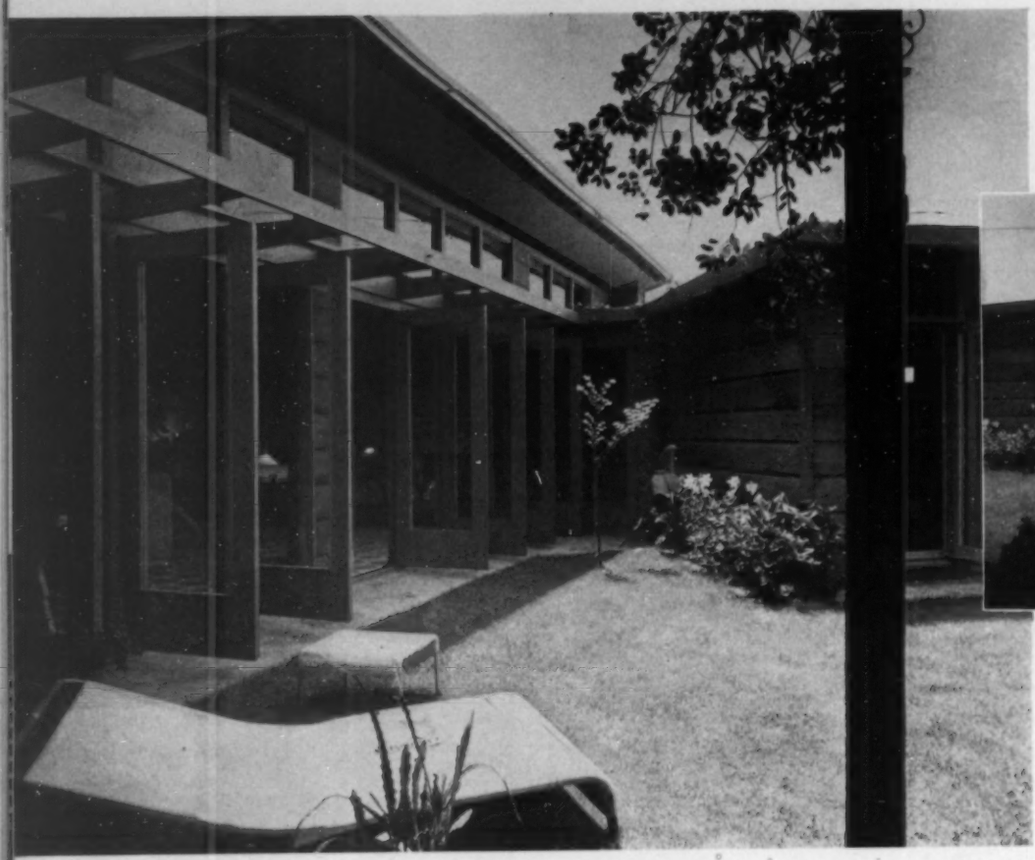
Residence of Mr. and Mrs. George P. Turner, La Canada, Calif.

WHEN the Turners decided to design their own house their central idea was what they call a "Design for Living — with Kids." The youngsters were not to be "pigeonholed," yet every member of the family was to have his share of privacy. A study of the plan on the opposite page will show how successfully the necessary compromises were worked out.

The house was designed by Mr. Turner himself, a radiant heating engineer, who made every nook and cranny conform exactly to the requirements and preferences of his family. The kitchen, for example (see photos, next page), seems to be unusually workable, organized as it is into zones of preparation, etc., grouped around a special refrigeration unit designed and built by Mr. Turner. A happy feature while the children are young is the clear view of the sand box and play area obtainable from the kitchen.

Julius Shulman Photos





Every room in the house opens to the patio, seen in the two views above (left, the living room; right, the bedroom wing). The carport, a corner of which is shown in the small view above, doubles as a lanai. The kitchen (below) is organized into working areas grouped around a departmentalized refrigeration unit combining all required temperature zones; a breakfast bar separates kitchen and dining area (below, left). Lighting throughout the house is predominantly indirect, and much special equipment is built in

Julius Shulman Photos

The master bedroom (above) looks directly out to the children's sandbox, which will be converted to a reflecting pool when the children have outgrown it. Below: the built-in dressing table and storage unit in the master bedroom. Interior finish is natural redwood and painted or stained plywood; exterior is redwood siding. Windows are aluminum double hung, floor coverings are asphalt tile and hemp matting. Heating, of course, is radiant. Careful orientation shades every room from the hot Southern California afternoon sun

SCHOOL PLANNING AND SCHOOL COSTS

ARCHITECTURAL RECORD'S BUILDING TYPES STUDY NUMBER 147

WHAT about school costs? How are costs affected by school planning? Can a modern "finger-plan" school be built within the same price range as a conventional school, or are its advantages bought at a price premium? How does a single-story school compare in cost with a two-story school?

These and other cost questions are important today. The first half of the century has brought some enormous improvements in school standards. Meanwhile the birth-rate has outrun us, and so have the costs of materials, labor, taxes, and overhead organization. We have to remember: better schools for *all* children!

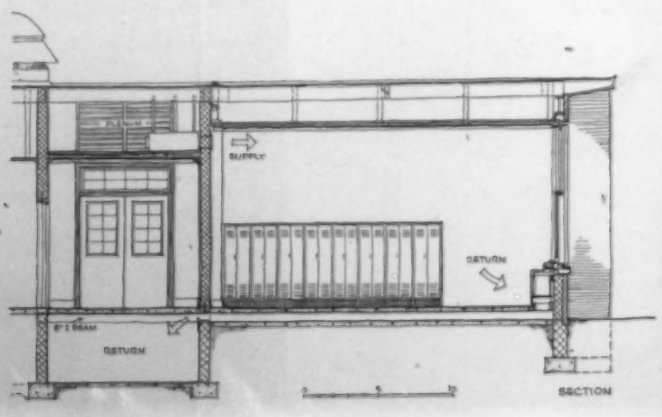
In last year's school study, the RECORD concentrated entirely on standards, chiefly those of the visual environment in school. Mr. Clapp, of the Michigan Department of Public Instruction, expressed the opinion then that such standards could be obtained in the "cold-winter" eastern states as well as the "warm-winter" west. We now open this question to research.

To start things, Alonzo Harriman and Philip Gatz, school architects of the saving state of Maine, have made a thorough study herewith presented. It contains some surprises. One of these is the great effect on cost of *room height* as compared to span. Incidentally, the champion performer among school plans to date, in their calculation, is the one-story plan with double-loaded corridor, and a trussed pitched roof.

Among examples shown are some striking cases of schools built at low cost. But standards have also been advancing. Among executed examples, we show two more "top-lighted" schools — one of them Ernest J. Kump's improvement over last year's model, and another the contribution of Wm. Arild Johnson in the Northwest; also the remarkable "portables," p. 128.

Low maintenance cost of ceramic tile is combined with utility of corkboard nailing strip in Quaker Ridge School, N. Y., by Howard S. Patterson, Architect and Francis Keally, Associate

To eliminate costly crawl space and "slab on grade," the floor of this New Jersey school was made of a concrete slab, on which were laid rows of concrete block, 3 ft. on centers, running from window wall to corridor. On these was stretched steel lath supporting another 2-in. slab, eliminating form work. The hollow space was used as return ducts for air originally supplied from plenum over corridor, by means of univents. This eliminates exterior-wall crawl space, reduces piping, wall boxes, grilles. A finned tube under windows is auxiliary heat source. Alexander Merchant & Sons, Architects



A COST STUDY OF SCHOOL PLAN TYPES

By Alonzo J. Harriman *

EDITORS' NOTE: READ WELL BEFORE USING!

Here at last is a method of testing school plans for comparative structural cost, using real figures. These have been assembled by the partners in an architectural firm that has designed successful schools over a period of 69 years in Maine, the frugal, cold-winter State.

What the authors have done is to collect those unit costs which are significant in establishing the comparative structural cost, per square foot and per classroom, of various accepted plan arrangements. They themselves explain carefully how this has been done.

Authors and editors both wish it clearly understood, however, that figures given do not, in general, represent total building costs and cannot be used to estimate what the final cost of a school building, or part of a building, of any given size or type should be. They are useful only as a basis of comparison among plan arrangements.

We believe that the authors have demonstrated a splendid working method. Although the actual figures would be modified in different localities, the method is one which any reader can set up for himself, filling in with correct figures for his locality, and come to a sound result.

We believe there is a strong presumption in favor of the authors' general conclusions, on a country-wide basis, and there are some interesting surprises among these conclusions. Editorial commentary has been added where the Maine situations seem to be specialized, and we invite the further commentary of our readers.

Further studies will be published by the same authors adding factors of upkeep and maintenance, and of mechanical equipment such as heating and lighting.

The Editors

THROUGH an intimate association with schoolhouse construction over a period of the past 29 years, I am convinced that it is the community, and not the building committee, that determines whether an architect *continues* doing schools. And no matter how good a completed schoolhouse may be, if it has cost too much, they never forget it.

As we all know, this country's need for new school construction is astronomical, and funds are hard to get. If we can help the community get one or two classrooms more for the same money, by sound engineering planning, we justify the human usefulness of our profession.

My partner, Philip Gatz, has analyzed the contractor's cost sheet for every school that we have built, and the figures which follow are taken directly from the current cost sheets of contractors. Since our purpose is to study the *effect of different plan arrangements* on structural cost, and not to establish the full final cost of any one school, the figures in the table on the next page cover materials and labor only. They do not include overhead or fees of any kind.

This first installment of our study is in two parts. In the first part, we compare a typical *section*, composed of a corridor with either one or two adjoining classrooms of standard length (varying the other dimensions), and again the same thing in two stories.

Basis of Cost Comparison of One-Story Types (Non-fireproof)

Floor area of unit considered includes one half corridor for double units shown, and whole corridor for single units.

Construction cost analysis, in general, is based on level of ground floor as the starting point and includes side walls, roof, corridor walls, one end partition in each classroom, wood stud partitions, ceilings strapped with wood strapping, walls and ceiling covered with gypsum board, painted.

The material and labor prices used to arrive at estimated square foot cost are net without overhead or profit.

The square foot prices indicated are to be used only as a basis of comparison between different types of construction.

The assumption has been made that the foundation and ground floor construction will not materially affect the relative costs of the various types so that the cost of these items is not reflected in the square foot comparison.

The assumption has also been made that the cost of heating, plumbing and electrical installations is an independent cost factor of the various types so that the cost of the same is not included in this square foot comparison.

Basis of Cost Comparison of Two-Story Types (Semi-fireproof)

Floor area of unit considered includes adjoining corridor.

Construction cost analysis, in general, is based on level of ground floor as the starting point and includes side walls, upper floor, roof, corridor, lath and plaster ceiling and one end partition in each classroom of semi-fireproof construction.

The square foot prices indicated are to be used only as a basis of comparison between different types of construction.

The assumption that foundations, ground floor construction, heating, plumbing and electrical installations will not affect the relative cost of the various types has been made in this comparison, the same as in the case of one-story non-fireproof types. These costs are not included in the square foot comparisons.

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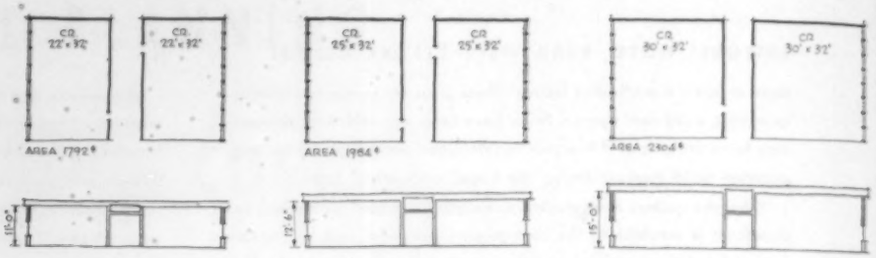
* Figures compiled by Philip Gatz, partner of Mr. Harriman, Alonzo J. Harriman Inc. Architects • Engineers

TABLE 1 COMPARATIVE STRUCTURAL COST, IN SCHOOLHOUSE SEGMENTS OF STANDARD LENGTH

Costs given cover selected structural factors only. What these factors are is fully described on page 111, preceding the table.

GROUP 1. *Schools with double-loaded corridor and unilateral daylighting; classrooms facing approximately east and west, in 1-story or 2-story buildings*

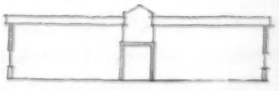
TYPE OF CONSTRUCTION *



	22' × 32'	25' × 32'	30' × 32'
TYPE 1. Non-fireproof *Roof construction:* wood joist, wood-sheathed deck, rigid insulation covered with 20-yr. tar and gravel roofing *Side-wall construction:* concrete to window sill, steel frame, directional glass block, metal sash and hopper vents *Corridor walls:* bearing wood stud partition	Per sq. ft. * ..... $3.52 Per classroom $3156	Per sq. ft. .....$3.59 Per classroom $3554	Per sq. ft. .....$3.63 Per classroom $4182
TYPE 2. Non-fireproof *Roof construction:* steel open-web joist with wood nailers, wood-sheathed deck, rigid insulation covered with 20-yr. tar and gravel roofing *Side-wall construction:* concrete to window sill, steel frame, directional glass block, metal sash and hopper vents *Corridor walls:* steel frame and wood stud partition	Per sq. ft. .....$3.56 Per classroom $3190	With variable clear ceiling height, see sections at top of page Per sq. ft. .....$3.60 Per classroom .....$3575 With constant clear ceiling height 11 ft. (for comparison only) Per sq. ft. .....$3.44 Per classroom $3416	With variable clear ceiling height, see sections at top of page Per sq. ft. .....$3.65 Per classroom .....$4207 With constant clear ceiling height 11 ft. (for comparison only) Per sq. ft. .....$3.26 Per classroom $3729
TYPE 3. Semi-fireproof *Floor construction (2nd floor):* open-web steel joist with 2½-in. concrete slab, with metal-lath and plaster ceiling applied directly to bottom of joist. Corridor reinforced concrete slab exposed on ceiling side *Roof construction:* same as floor except roof is insulated with 1-in. rigid insulation covered with 20-yr. tar and gravel roofing *Side-wall construction:* concrete to ground-floor window-sill, steel frame, directional glass block, metal sash and hopper vents, spandrel construction corrugated asbestos applied over asbestos-surfaced insulation board *Corridor walls:* Load-bearing masonry block, having exposed surfaces painted	Per sq. ft. .....$3.97 Per classroom $3560	With variable clear ceiling height, see sections immediately above Per sq. ft. .....$4.04 Per classroom .....$4009 With constant clear ceiling height 11 ft. (for comparison only) Per sq. ft. .....$3.85 Per classroom $3815	With variable clear ceiling height, see sections immediately above Per sq. ft. .....$4.10 Per classroom .....$4731 With constant clear ceiling height 11 ft. (for comparison only) Per sq. ft. .....$3.65 Per classroom $4206

TYPE X
Roof construction: steel open-web joists with wood nailers, wood-sheathed deck, rigid insulation covered with 20-yr. tar and gravel roofing. Continuous metal skylight
Exterior side wall construction: concrete to window sill, steel frame, wood sash glazed with clear glass, no glass block
Corridor walls: steel frame, wood studs under, clear glass over
Corridor ceiling: wood joists, insulation with batts, covered on underside with gypsum board

Per sq. ft. $4.16
Per classroom $4799



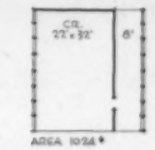
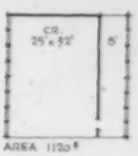
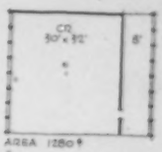
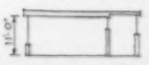
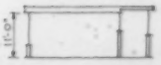
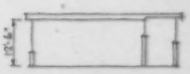
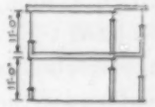
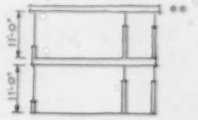
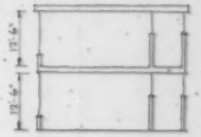
AUTHOR'S CONCLUSIONS FROM ANALYSIS OF PLAN TYPES (TABLE I)

1. An analysis of the square foot costs of the constant height building shows that in all cases the square foot cost *decreases* with an increase of the span.

As the span increases, and the height remains constant, the additional roof cost is not sufficient to offset the lower resultant cost per square foot of the total building area.

2. An analysis of the square foot cost of the classroom with a variable height shows an increase in cost as the span increases. The height in this case varies

GROUP 2. *Schools with single-loaded corridor and bilateral daylighting; classrooms facing approximately north, in 1-story or 2-story buildings* †

TYPE OF CONSTRUCTION			
			
			
Type 1. Non-fireproof *Roof construction:* wood joist, wood-sheathed deck, rigid insulation covered with 20-yr. tar and gravel roofing *Classroom exterior side-wall construction:* concrete, steel frame, wood sash, single-glazed with clear glass *Corridor wall of classroom:* wood frame, clear glass above, wood stud partition below *Exterior corridor wall:* concrete, wood frame, wood sash above	Per sq. ft.....$3.62 Per classroom.....$3703	Per sq. ft.....$3.50 Per classroom.....$3917	Per sq. ft.....$3.63 Per classroom.....$4648
TYPE 2. Non-fireproof *Roof construction:* steel joist with wood nailers, rigid insulation covered with 20-yr. tar and gravel roofing *Classroom exterior side wall construction:* concrete, steel frame, wood sash, single-glazed with clear glass *Corridor wall of classroom:* same as Type 1 above *Exterior corridor wall construction:* same as Type 1 above	Per sq. ft.....$4.47 Per classroom.....$4588	Per sq. ft.....$4.23 Per classroom.....$4741	Per sq. ft.....$4.32 Per classroom.....$5528
TYPE 3. Semi-fireproof *Floor construction (2nd floor):* open web steel joist, with 2½-in. concrete slab, with metal lath and plaster applied directly to the bottom of joist. Corridor, reinforced concrete slab exposed on ceiling side *Roof construction:* same as floor, except that roof is insulated with 1-in. rigid insulation covered with 20-yr. tar and gravel roofing *Exterior side-wall construction of classrooms:* concrete to ground-floor window sill, steel frame, wood sash single-glazed, and hopper vents, spandrel construction corrugated asbestos applied over asbestos-surfaced insulation board *Exterior side-wall construction of corridors:* same as classroom *Corridor walls of classrooms:* wood stud partition with clear glass wood sash over	 Per sq. ft.....$4.69 Per classroom.....$4823	 Per sq. ft.....$4.60 Per classroom.....$5143	 Per sq. ft.....$4.58 Per classroom.....$6065

FOOTNOTES, opposite page and this page.
* Costs per square foot of floor area.
† Schools of Group 2 conform to code in some States but not in others. So far as performance is concerned, in producing a high-quality environment for children, these schools would seem to be at least on a par with Group 1, and many architects consider them superior (Ed.)
** Some of the roofs on this page were drawn with thinner construction above corridors, some with equal thickness throughout. The discrepancy was inadvertent. Mr. Harriman believes that economy is greater, in his region, in a roof of equal thickness throughout, for this plan type.

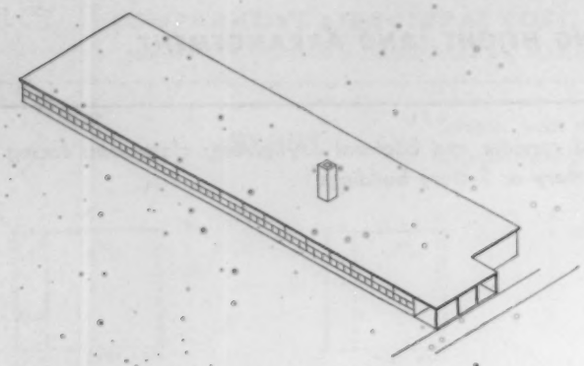
in accordance with the recommendation of the National Council or the state law.

As the height increases in proportion to the span, in accordance with state law and national code, the additional roof and wall cost is great enough to more than offset the lower resultant cost per square foot of the total building area.

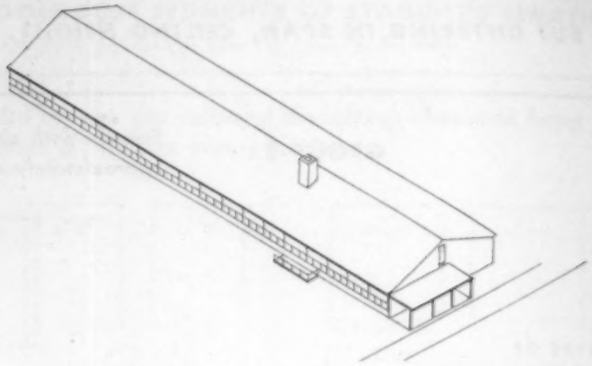
3. This would seem to indicate that a typical building similar to Type X, with a pitched roof and bilaterally lighted, and a minimum height at the eaves, would be the most economical type of schoolhouse to build.

We would suggest classroom floors 24 ft. by 36 ft. and an eaves' height of 9 or 10 feet, and a height at corridor wall under skylight of 12½ feet to classroom ceiling. This building would have a continuous skylight similar to Type X.

4. In all cases shown here, wood construction is cheaper than steel. It should be noted that over 30-ft. classroom span steel will probably be cheaper than wood.



1



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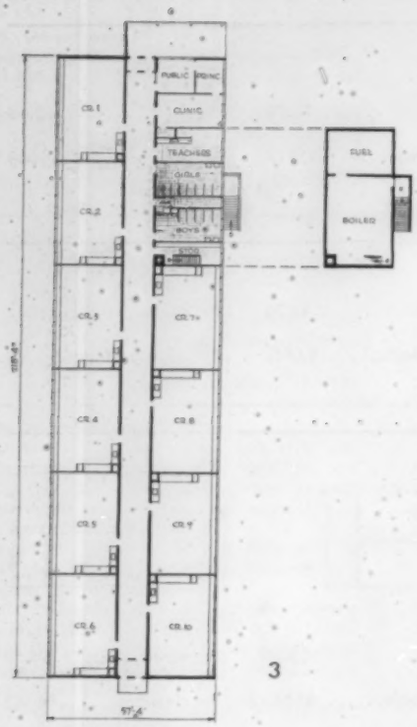

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TABLE 2:

SCHOOL COST COMPARISON

One-story Semi-fireproof, One-story Combustible Roof and Two-story Semi-fireproof

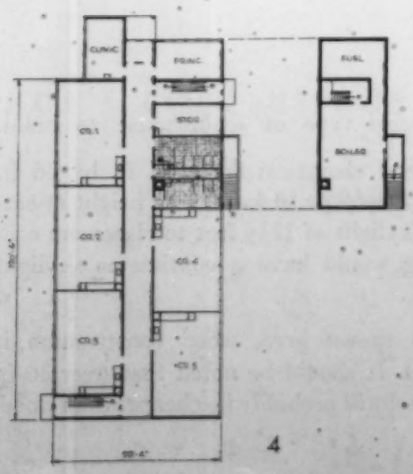
This comparison is based on identical construction in both the one- and two-story semi-fireproof buildings, employing poured concrete to the first floor window sills, steel sash set in the steel building frame with glass block above, and corrugated asbestos cement spandrels over wood studding insulated with batts in the two-story building. The second floor and roof construction are poured concrete slabs over bar joists in classroom areas, with poured concrete slabs spanning between concrete corridor walls for both second floor and roof.

First floor in either building is poured concrete over fill, using framed slabs over the boiler room. Ceilings in semi-fireproof buildings are lath and plaster and in combustible buildings are of acoustic tile. Floors are of asphalt tile. The roof is insulated with fiber board over concrete for semi-fireproof construction. Batt insulation is used in ceiling of combustible building.

The wood roof used in the one-story combustible roof building is composed of light wood trusses 24 in. o.c., covered with tongue and grooved sheathing and slate surface asphalt shingles. The corridor wall in this type is wood studs covered with ½-in. gypsum board on both sides.

Above: 1. Semi-fireproof one-story school; 2. one-story school with combustible roof; 3. plan used in computing both
Below: 4. first-floor plan, and 5. second-floor plan of two-story semi-fireproof school seen in (6)

COST ESTIMATES	One-story Semi-fireproof	One-story Combustible Roof	Two-story Semi-fireproof
Total Cost	$194,564	$189,142	$203,437
Total Area	13,660 sq. ft.	13,660 sq. ft.	16,214 sq. ft.
Cost sq. ft.	$ 14.25	$ 13.84	$ 12.54
Cost per classroom	1946	1891	2034



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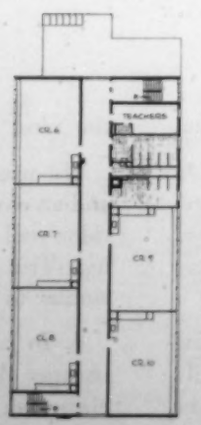

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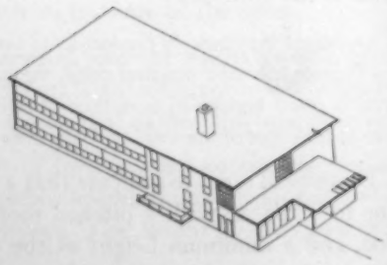

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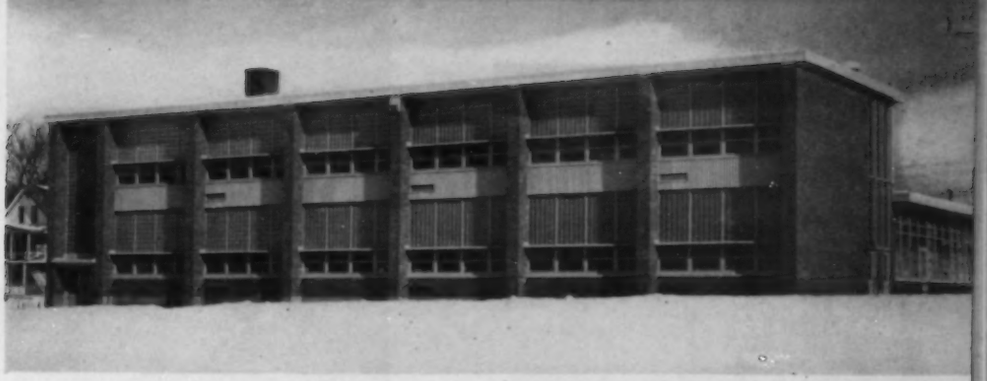
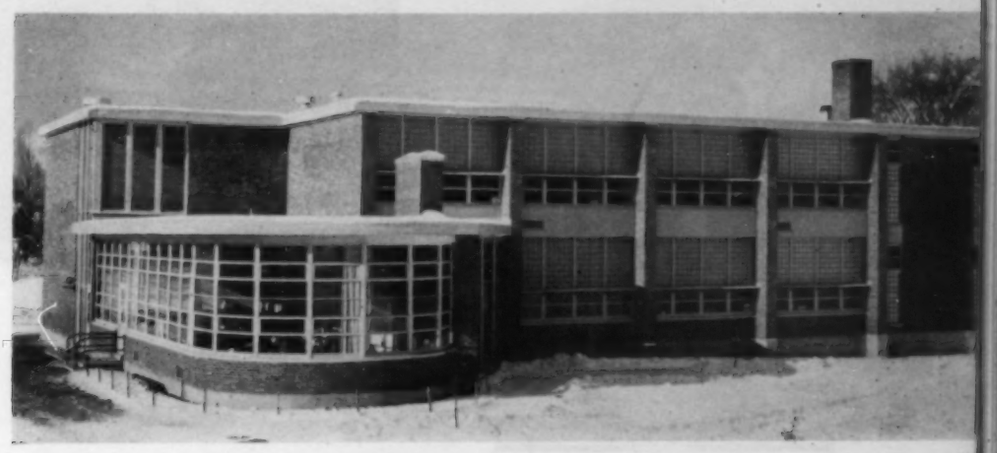


Brewer School, Maine, by the same architect, is of concrete frame, with exterior facing and brick piers of Canadian brick. Glass block (directional) are in steel frames carried over steel operating windows making up vision strip. Spandrels of corrugated asbestos backed by insulation help to make the wall texture rich and interesting at low cost. Let in 1947 at $9.91 per sq. ft. Projecting wing houses kindergarten



AUTHOR'S CONCLUSIONS ON COSTS IN TABLE 2

A further breakdown will follow in the April issue

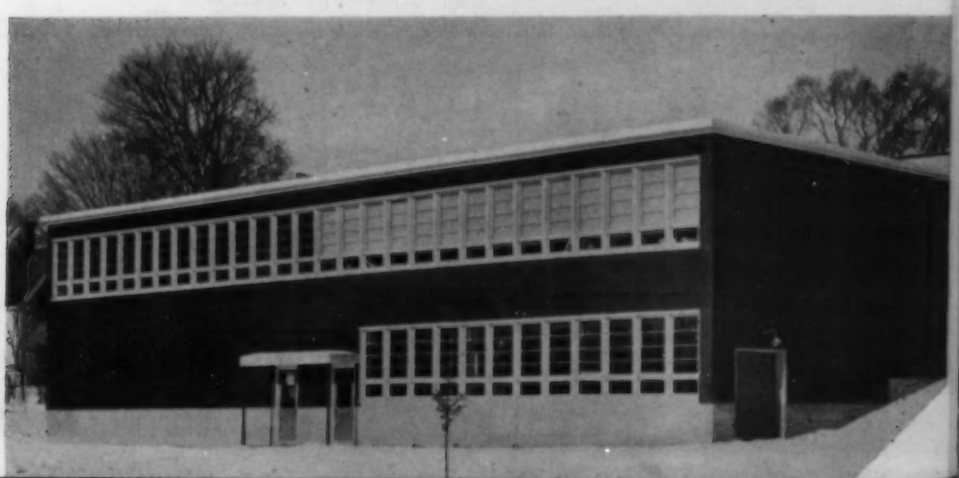
1. An analysis of total cost of two-story semi-fireproof, one-story semi-fireproof and one-story combustible shows a saving of 4.3 per cent in favor of the one-story building.

The same one-story building with combustible roof shows a further saving by use of combustible roof of 2.7 per cent or a *total saving of 7 per cent between the one-story combustible roof and two-story semi-fireproof building.*

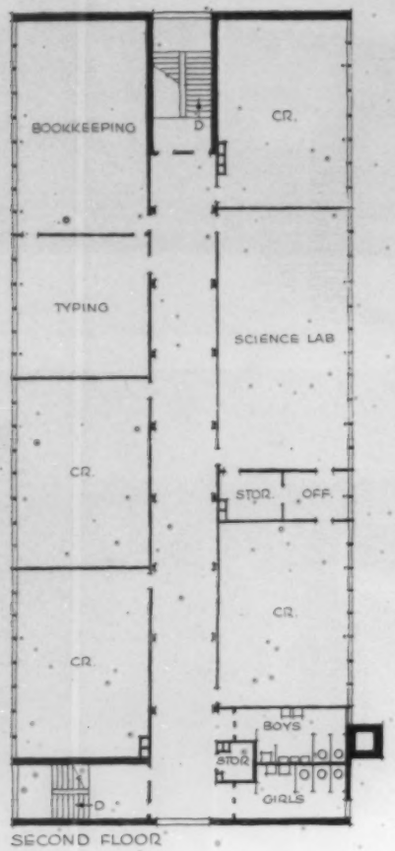
2. In general, the one-story plan shows a saving in the net area due to the omission of stairs.

3. The following factors show an increase in construction cost:

A. In the one-story building	*B. In the two-story building*
Excavation	Concrete floor construction
Foundation Walls	Masonry
Roofing	Carpentry
Heating and Ventilating	Steel Frame
	Ceramic Tile



Shop of Brewer School, Maine, is on a sloping site. On the sloping site each floor has direct egress, permitting non-fireproof mill construction. Cost $7.37 per sq. ft.



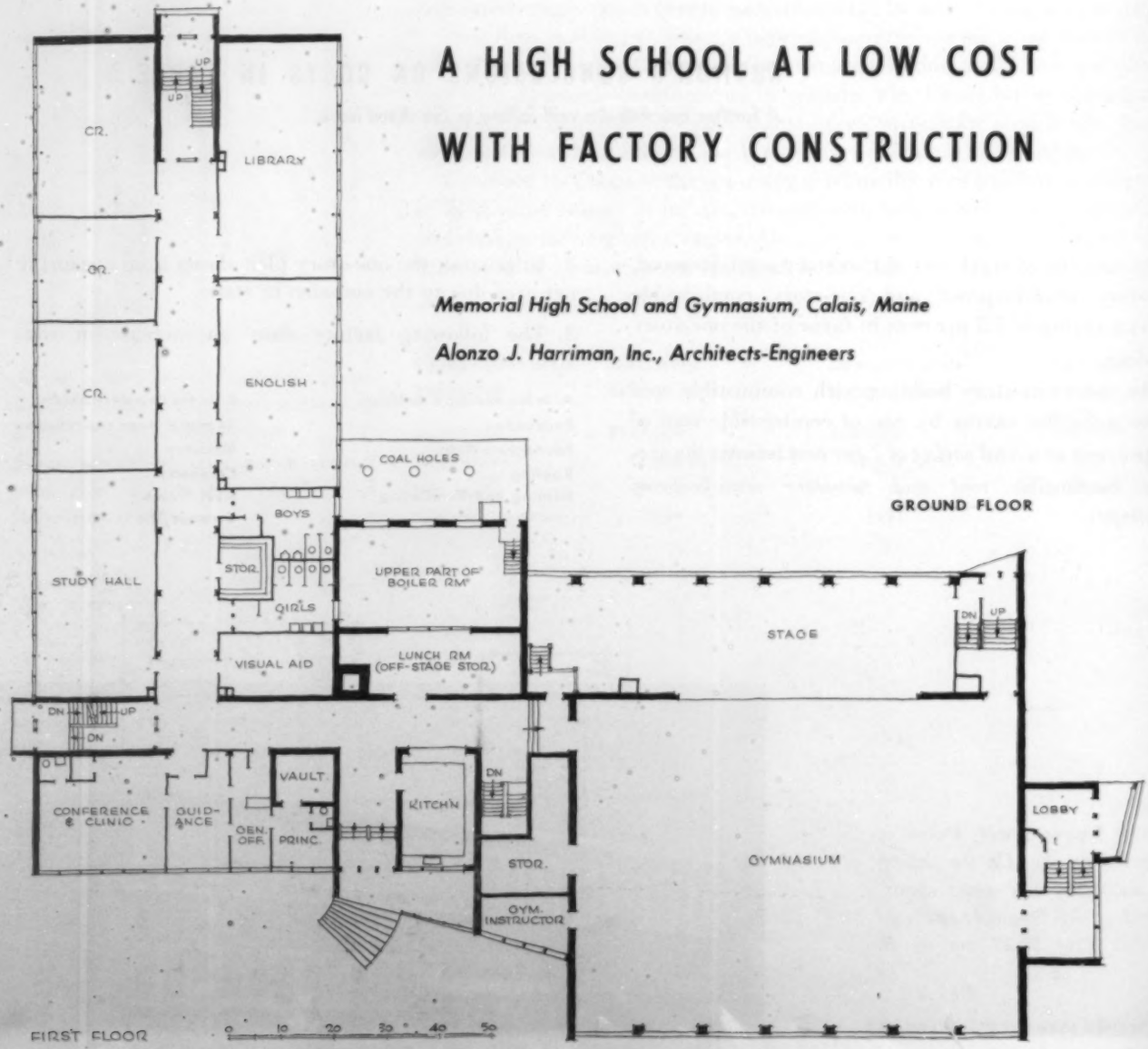
SECOND FLOOR

NORTH EAST

A HIGH SCHOOL AT LOW COST WITH FACTORY CONSTRUCTION

Memorial High School and Gymnasium, Calais, Maine

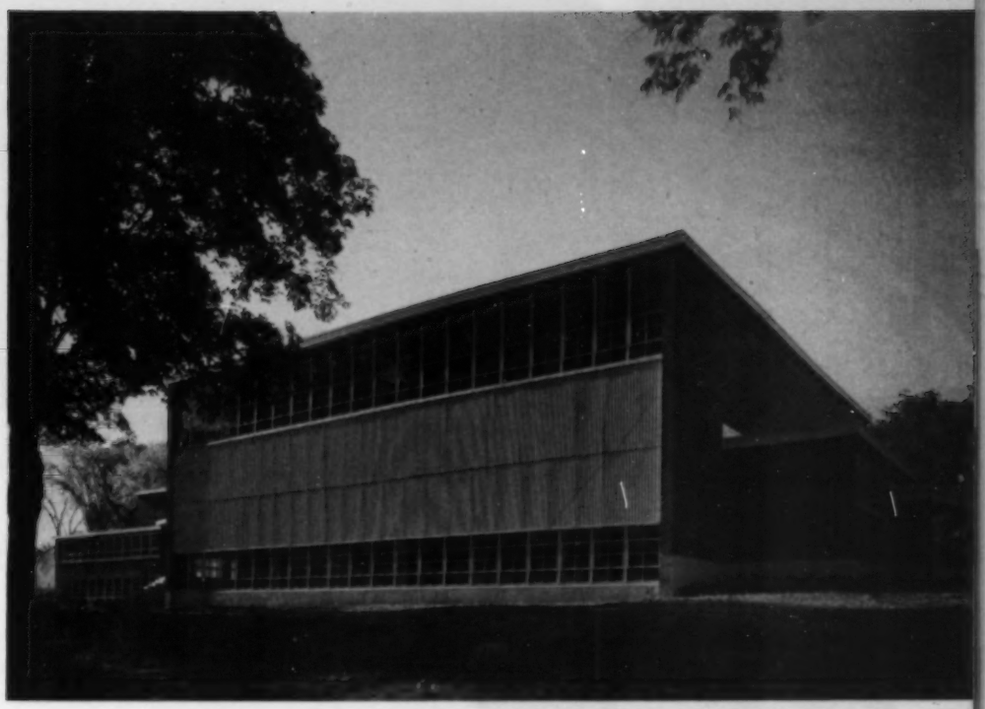
Alonzo J. Harriman, Inc., Architects-Engineers



GROUND FLOOR

FIRST FLOOR

Clarence H. White Photos

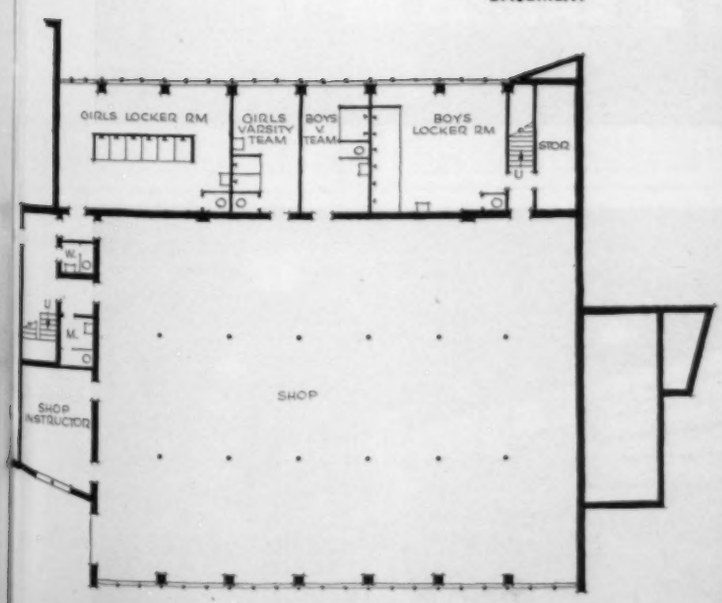


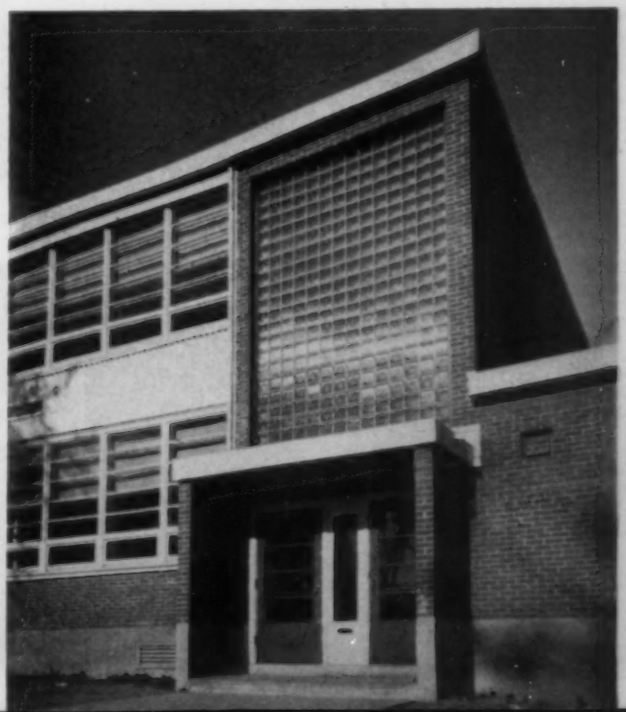
As in all of this architect's schools, the academic, administrative, and athletic elements are separated — the athletic so it can be used independently. The conference and clinic room (see plan) is used also as a teachers' room large enough to accommodate the entire staff. The off-stage storage room still remains as cafeteria and lunch room; two sittings take care of all students who remain for lunch. The last-minute demand for an instructor's room between kitchen and gym gave the architect a little trouble with his front.

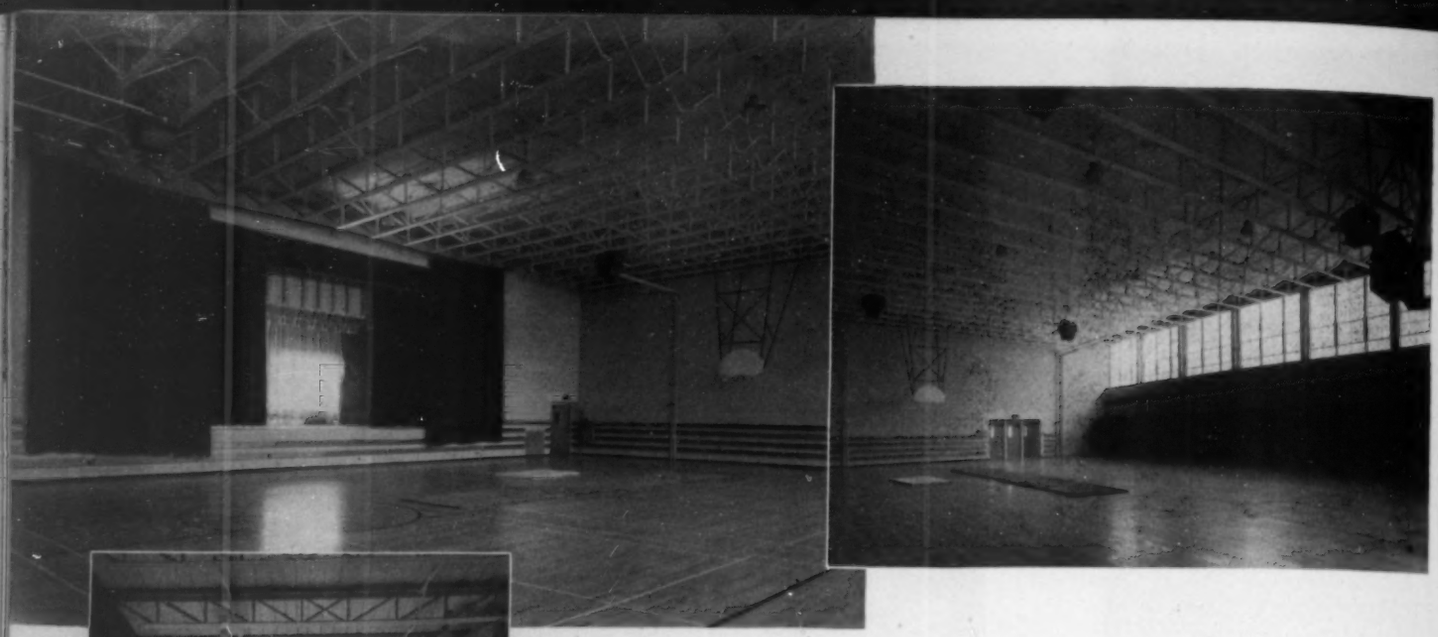
Structure is of concrete frame, using lally columns at the exterior wall, so that the wall together with the corrugated asbestos spandrels carries no roof load, and windows reach to full ceiling height. Bricks were imported Canadian. There is vapor heating system with unit heaters ventilating out through corridors. Walls between classrooms are a "utility" type of prefab partitions, faced with Transite both sides, and "standing up very well," giving some flexibility.

Built in 1946–47, the total building cost $9.10 per sq. ft. or 81 cents per cu. ft. including gymnasium. Without gymnasium the figures were $10.55 and 81 cents.

BASEMENT





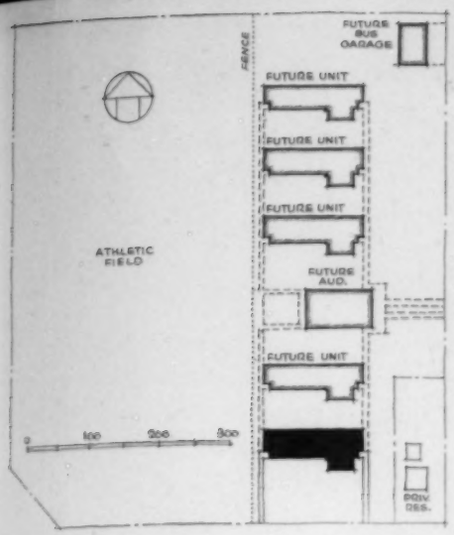


Gymnasium doubles as auditorium, and, as may be seen, the stage is large enough to serve as a practice room for music. The playing floor is 87 by 89 ft. Spectators are accommodated to the number of 600, although it is said that for a big basketball game the capacity comes closer to 1,000

Clarence H. White Photos

A large school shop, seen to the right, occupies the area underneath the gymnasium floor; the other rooms are a typical classroom and science laboratory. In both may be seen the lally-column supports under concrete beams, which permit windows to extend up to the ceiling

Clarence H. White Photos



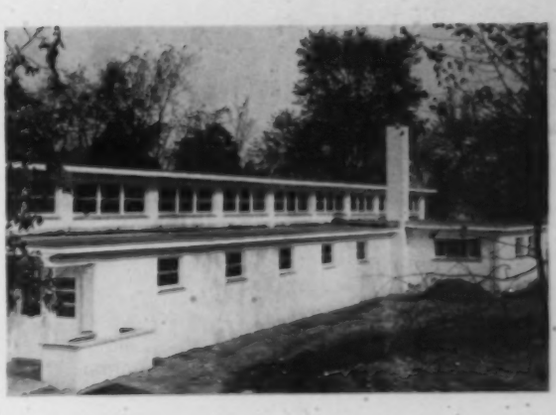
MIDDLE WEST

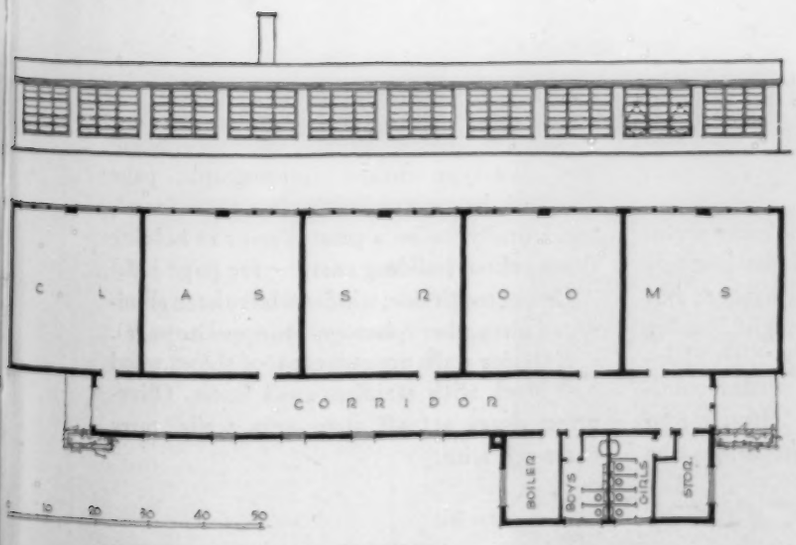
BETTER SCHOOL ENVIRONMENT, LOWER COST

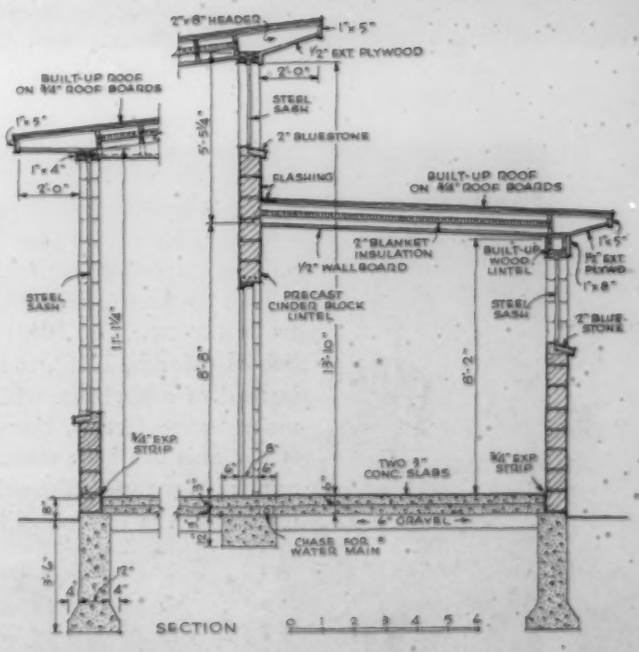
Milan School, Michigan

Walter T. Anicka, Architect

ONE of a group of rural schools, this is reported by the architect as having cost only $6.34 per sq. ft., 51 cents per cu. ft., or $7,360 per classroom, "complete with various bookshelves and cases but exclusive of asphalt tile floor." No sacrifice was made in essentials of good environment; on the contrary, classrooms are square, large; have ample bilateral daylight; have radiant heat (wrought iron pipe in floors). Cost-saving methods: (a) cinder block walls entirely on modular grid; (b) "absolutely no cutting of block, wood ceiling joist, or oversize wallboard (finished with cold-water paint)"; (c) low rural labor cost; (d) "well detailed plans, easily interpreted by small rural contractors." Another nearby school, almost complete, by the same architect, shows a contract cost of $7.86 per sq. ft. with more complete finish — structural tile toilet partitions; lockers; acoustical plastered ceilings; asphalt tile floor. The Milan school has just been completed.







WEST

A CHILD-SCALED SCHOOL IN A FRESH MODEL

Shoreview School, San Mateo, California

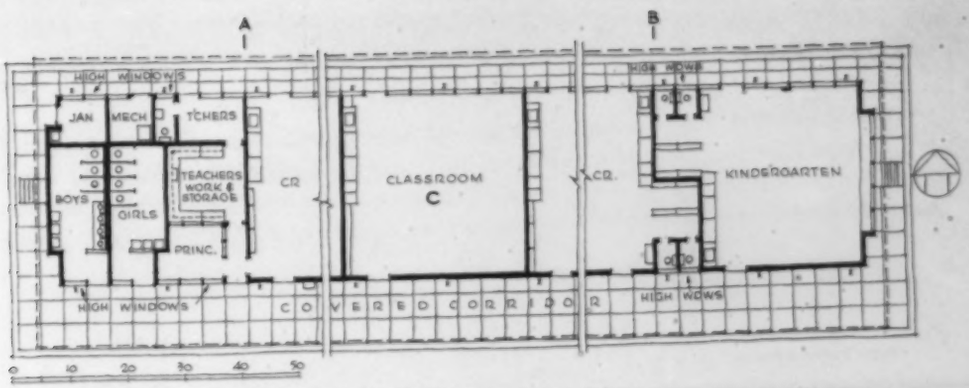
By Ernest J. Kump & Mark Falk

AGAIN this architect has given a vivid expression to the idea of a school as a pleasant place for children.

Like the Laurel School by the same architect (RECORD, Jan., 1948) and the Barstow School (March, 1948), it is toplighted; but instead of a skylight, which might involve maintenance factors, there is a high clerestory. This has been managed with a minimum disturbance to the quiet sheltering roof lines; and the low eaves height brings the school into nice scale with the surrounding bungalow-type houses (photograph, page 123). (A low eaves height has been found, incidentally, to be a prime factor in holding down school building costs — see page 113.)

On the south side, windows have been eliminated altogether (photograph, opposite page).

Exterior walls are stucco; roof shows wood and steel, with stainless steel fascia. Olive-green doors set off stone-gray walls, terra cotta red trim.



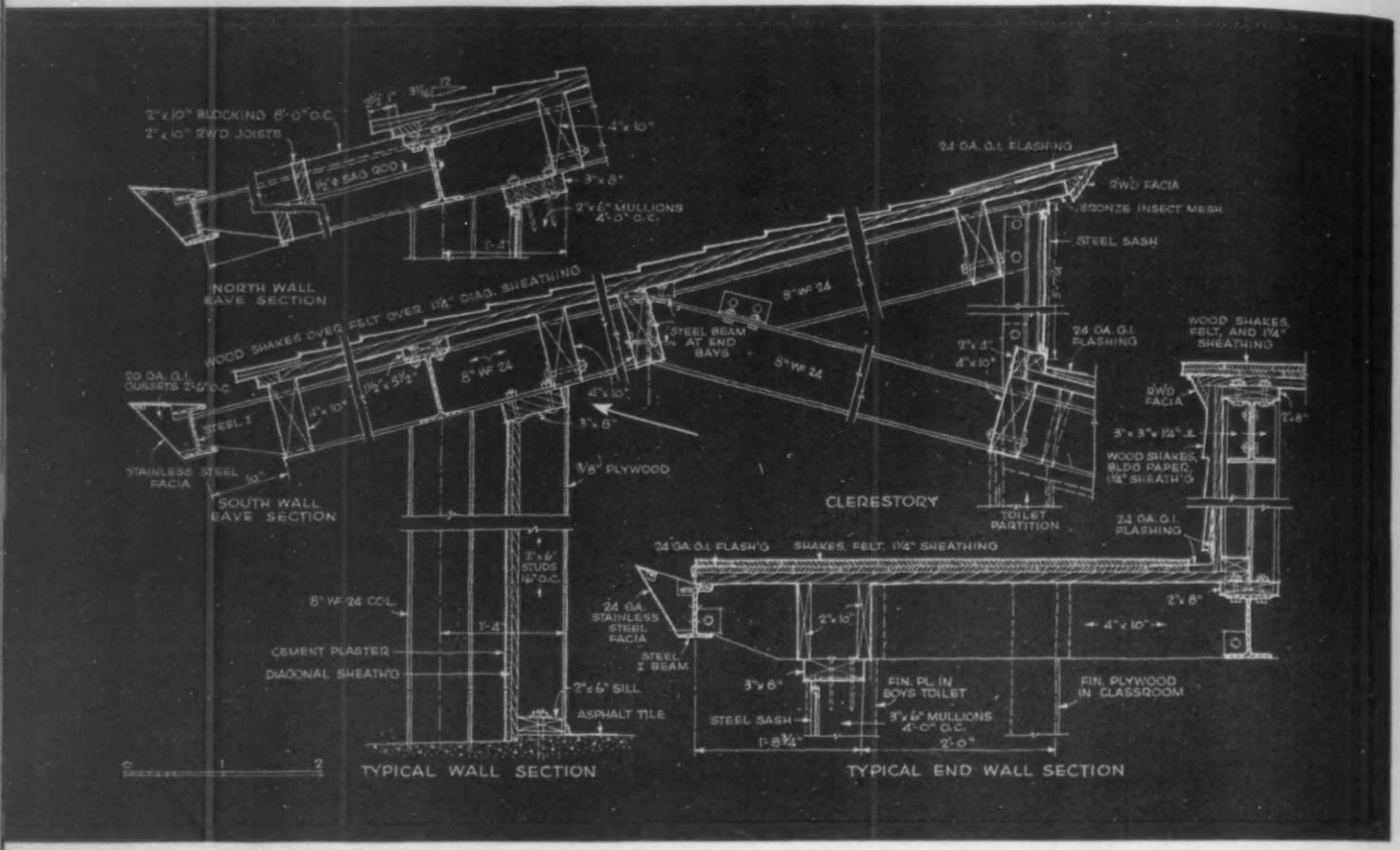
Telescoped plan. Between "A" and "B" there are five classrooms similar to "C"

Roger Sturtevant Photos

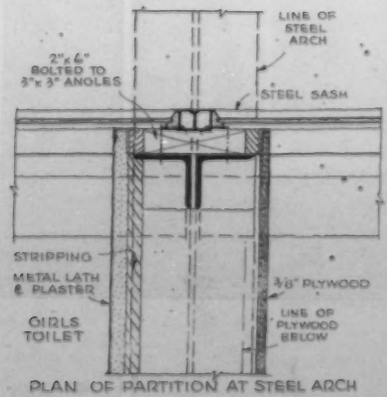
Roger Sturtevant Photos

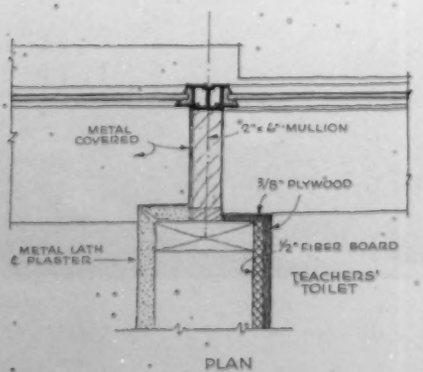
The very excellence of Mr. Sturtevant's photography in conveying how the interior is put together has one disadvantage. The lens subtends a wider angle than the main field of view of the child's eye; the ceiling and the clerestory light are far less prominent in the child's normal way of looking. Because the "top light" is well above the 60° central cone of vision of seated children looking straight across the room, the architect has omitted any baffles to screen off the glare of the sky. Such baffles, he contends, add initial cost and maintenance; and he prefers to use the restraining effect of tempered obscure glass up above. In other schools of the same model, now under construction, there has been restored a set of south transom windows.

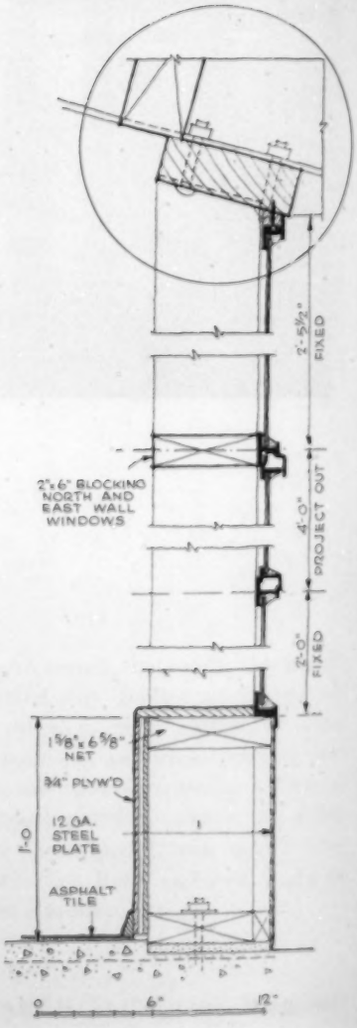
Opposite page, typical classroom; this page, kindergarten, both looking east. Interior walls are plywood, floor asphalt tile, ceiling acoustic tile. The soft effect of the fireproof curtain suggests that more use might be made in the U.S. of drapes and awnings, as is done in Switzerland and Scandinavian countries. The glare of white houses seen through windows is to be screened by planting

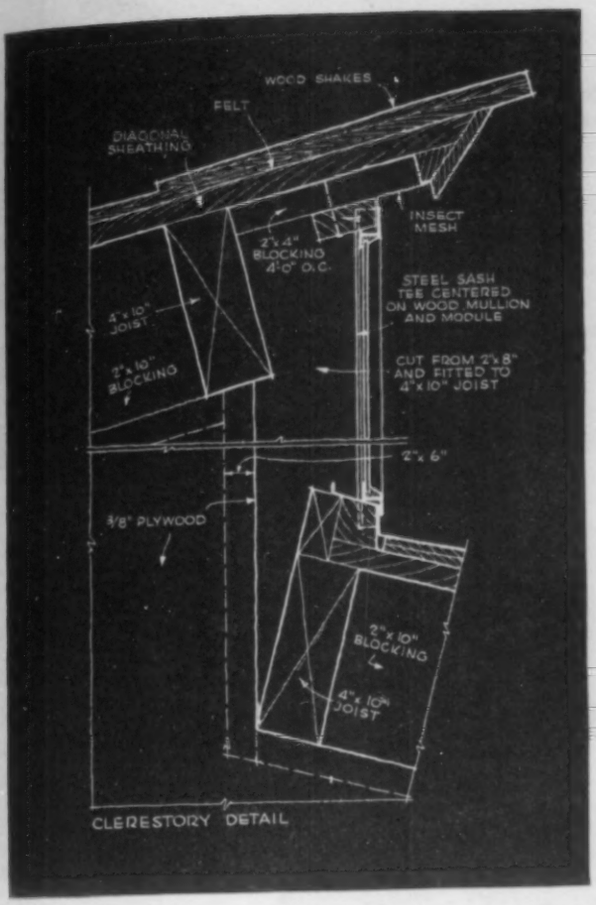


Above are seen typical sections. The section at the right is of the north window wall. The way the slanted top plate (in the circle) fits against the roof arch may be seen by comparison with the corresponding plate of the south wall (arrow in top drawing). The structure is of rigid steel frames at 16-ft. spacing; the roof deck is carried on wood purlins. (Roof was covered with asphalt shingles instead of wood shakes as seen in drawing.) Drawings at bottom of page show how partitions are connected; and photographs give a clear indication of the way the structural frame is kept independent of all walls and partitions for flexibility. South overhang (small photo, opposite page) is solid because no windows; the latticed overhang to the north admits more light to windows while cutting glare. Note stainless steel fascia

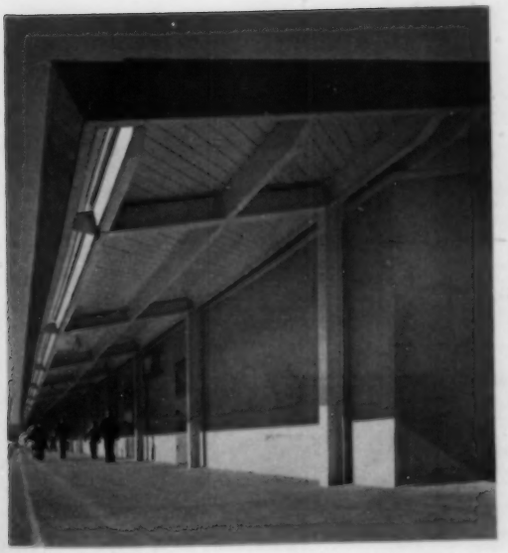




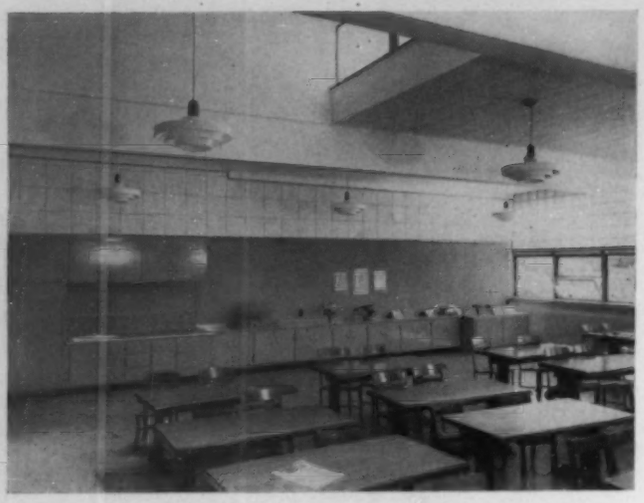




Roger Sturtevant Photos



NORTHWEST



William Arild Johnson & Associates, Architects

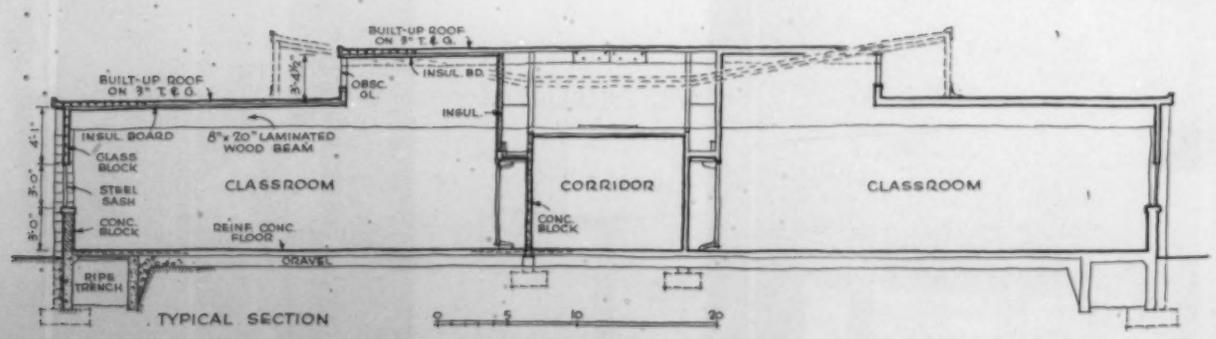
TRANSVERSE FRAMING MAKES TOP DAYLIGHT ECONOMICAL

Schools in Edmonds, Washington

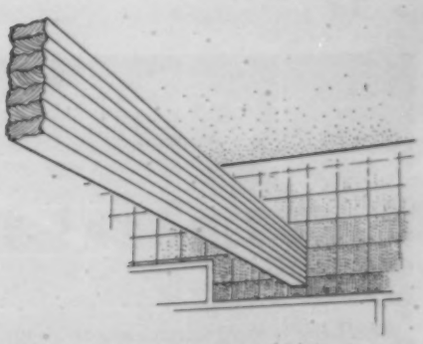
In the Pacific Northwest, as well as the Bay Region, there has been some desire to bring the open, California, side-corridor in out of the weather, and to "double-load" it for economy. Yet square classrooms are retained for teaching convenience and shortening of the building length. Auxiliary *top-lighting* is then needed for inside areas of the wide-span classroom. In San Francisco, Frank Wynkoop achieved this by a kind of "monitor" system supported on a heavy longitudinal steel girder (RECORD, June, 1945). Here we see, instead, the monitor carried on a series of transverse beams of laminated wood — in some examples with the aid of trussing cased in plywood (see photographs); in other examples by the unaided, uncased beam. The roof deck is of mill construction. The architect contends that the combination, for a room of 30-ft. span, is cheaper than conventional joists for a room of 24-ft. span.

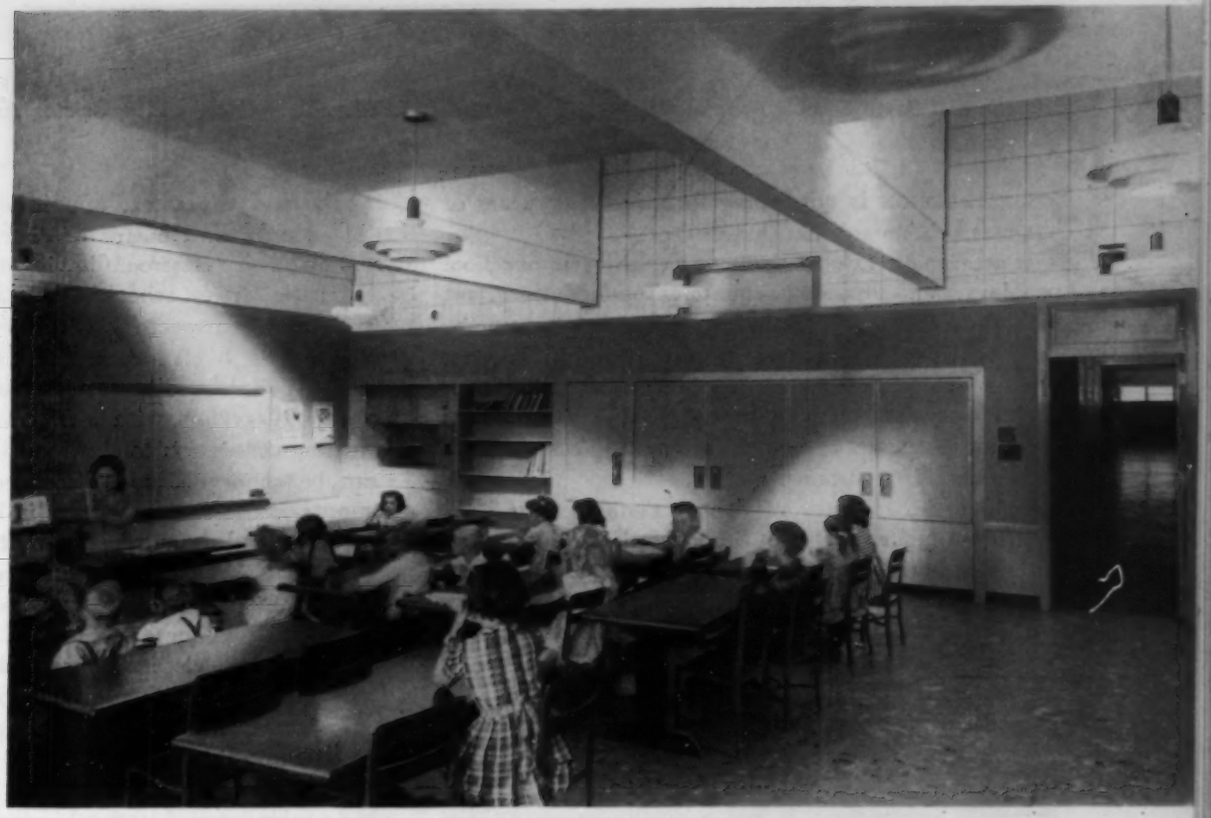
Directional glass block, in the upper part of the outside wall, even out the curve of light intensity toward the middle of the room, where it otherwise tends to dip in a room with this vertical section. Clerestory or monitor windows, being out of view when pupils are at work, are left with obscure glass. Low brightness differences in the visual environment are further controlled by paint of calculated reflection values, furniture and asphalt tile floors of light color. Exterior construction is of concrete block, oil-painted, with natural-finish pumice block interior partitions (all non-bearing); no plaster; acoustic tile above bulletin board height (these being of monk's cloth over cane board); chalk-boards bright green. Wardrobes are heated slightly by electricity, and vented by fan into the attic.

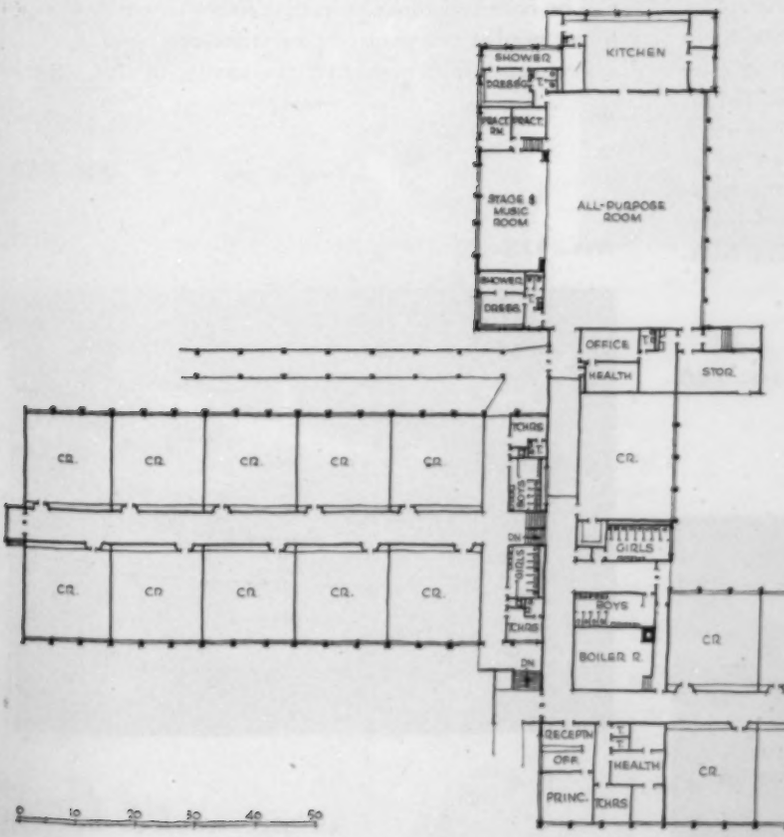
Costs were reported, for erection during 1947, at $9.23 per sq. ft. for structure only.



In photographs may be seen interiors of the Edmonds Grade School. The corridor side of a classroom 30-ft. deep is daylighted by a high monitor or clerestory, which is supported on a series of transverse beams of laminated wood. These are aided by trusses and the structure cased in plywood. In other schools the laminated truss does the work alone and is uncased (sketch)







Plan is of Esperance Grade School, with classrooms similar to those of the Edmonds Grade School. Vertical section, across-page, shows alternate construction with dihedral roof and the top-light nearer center of room. The system is reported economical. The scheme tends to complicate the building mass

SCHOOLROOMS TO COME AND GO WITH CHILDREN

Well built unit classrooms permit school to grow and contract

Briarcliff and Dover Schools, Seattle ***George Wellington Stoddard and Associates, Architects and Engineers***

CONSTRUCTION is now going forward, after years of research, on this unusual project.

It attacks directly the most vexing problem of school people: how to provide adequate accommodations, not makeshift, and yet without bankrupting the community, for a school population which not only multiplies fast but also *shifts*. Such shifts can result in *local decline* (in the very face of the general growth) leaving heavy school investments derelict, and tempting communities into makeshift solutions.

In Seattle, Director of School Planning Byron B. Smith put before Architect Stoddard the problem of an immediate critical need, in several districts, for classroom space, with foreseeable need for additional space within two to five years, then a gradual reduction in load back to the present need, and perhaps to the point of final elimination. Temporary classrooms were discarded as a solution. There evolved the theory of the first-class transportable school. To make the story short, this meant a minimum of fixed facilities that could be expanded or contracted, and a maximum of facilities that could be moved.

Building codes strongly affected the classroom plan. Since 12-ft. ceilings were required except in one-room schoolhouses, each classroom was designed as a one-room schoolhouse with 10-ft. ceiling. (A 12-ft. height would be totally unnecessary for lighting and ventilation in this type of room; also, the unit must pass under trolley wires and bridges.) Next, the one-room schoolhouse had to be spaced 10 ft. or more from its fellows; hence the intermediate courts (see plan). Central heating was adopted instead of unit heating. Corridors were needed only as a means of distributing children and services, every classroom having direct outdoor egress.

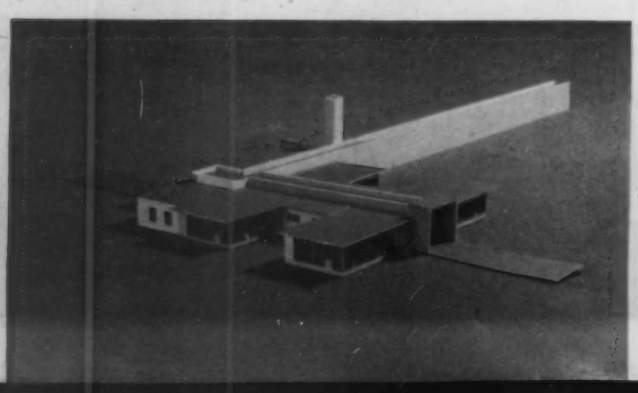
A basic 4-room school is the starting point. A boiler room has been erected with a boiler installed capable of handling 8 classrooms, and with provision for a second boiler handling 4 classrooms more, plus auditorium. Corridors with 3-ft. crawl space come next. Heating connection to classrooms is by 2 unions which can be connected and disconnected in a matter of minutes. (Classroom heating is by a split system of convectors plus unit heater-ventilators.) One flexible connection serves for electricity. Toilet rooms are provided between classrooms; the initial program also includes a combination office and teachers' room, book room, janitor's closet. The second step is to add 2 to 4 more classrooms with additional corridor; also the main office and health room. The third step adds the combined auditorium, playroom, and cafeteria, big enough for a gymnasium, to remain as a community facility if the remainder of the school is dismantled.

Upon the decline of the local school load, the school will be removed room by room, either to a new site or, where need develops, to replace obsolete types.

Promising high economy, the saving of this scheme

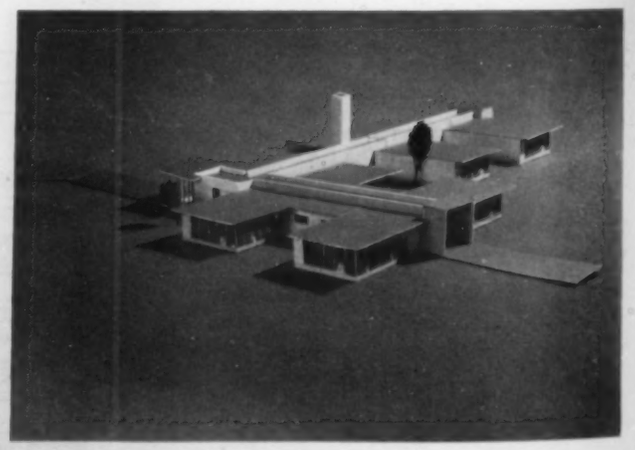
1948—**140**

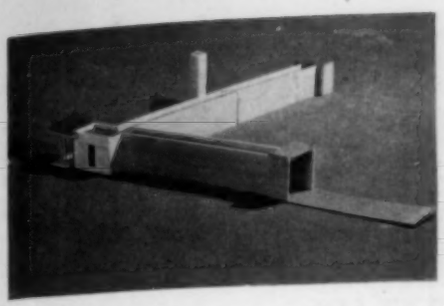
1947—**75**

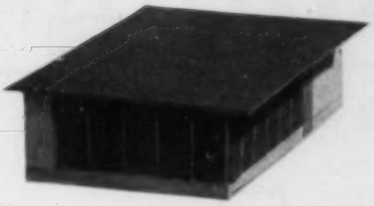


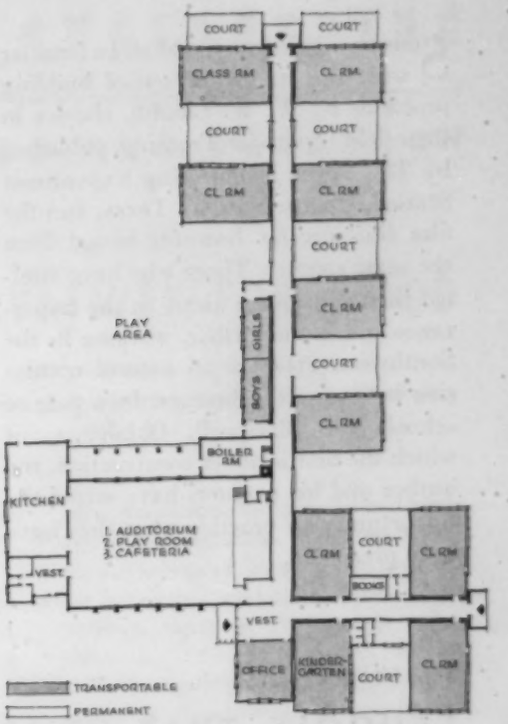
1950—**210**

1949—**175**









Component parts of transportable school, and plan of "Dover School"

is not so much in initial cost (only slightly under conventional types) but in replacement. Fully equipped, these rooms can be moved and relocated for at least 50 per cent less than a relocated portable, say the architects, while full amenities are provided. "As a result we have a permanent school but the equivalent of a movable site."

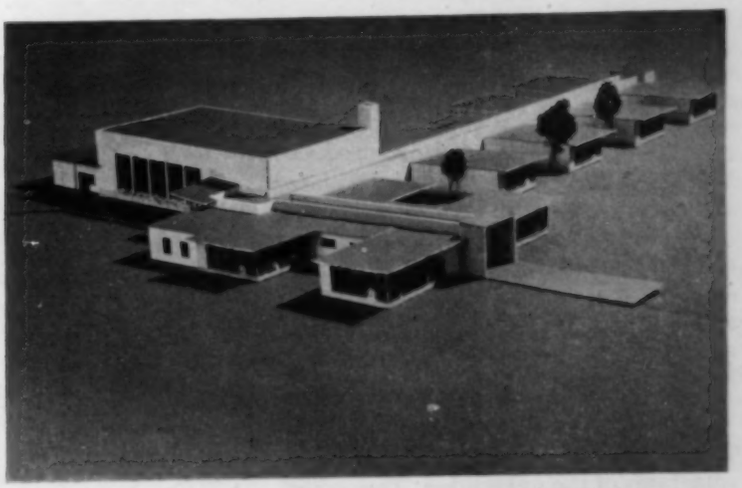
1954—400

1955—380

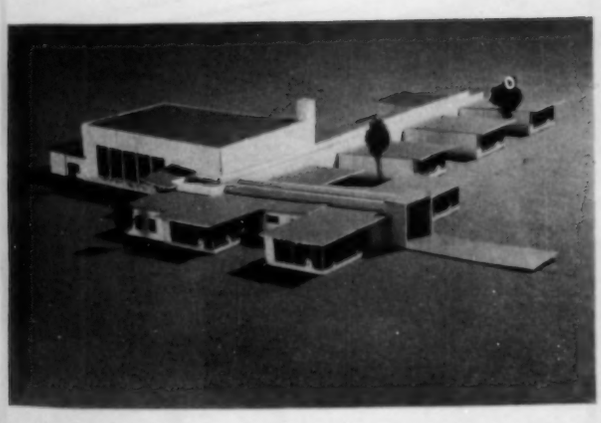
1953—380

1956—340

1952—350



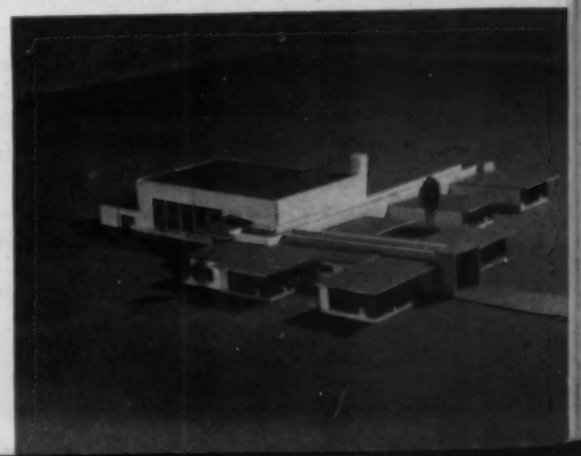
1951—180



1957—320

1958—280

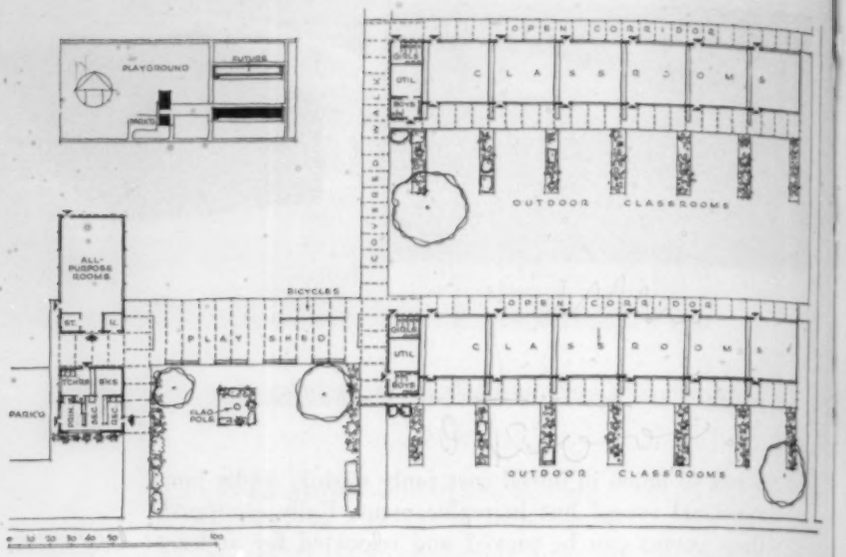
1959—230



Models were used to demonstrate the progressive growth and the subsequent dismantling which is possible in two schools under construction in Seattle. (Figures show the anticipated school population during the years of use.) The final school ends with the same capacity as the initial one, except that a permanent gym-cafeteria-auditorium is left behind, as a community facility, even though the school may later be totally removed.

Although the mobility is like that of "temporaries," the equipment and environment are up to the firstclass standard

SCHOOL architects should all be familiar with the studies of school building problems by W. W. Caudill, classics in their field (*Space for Teaching*, published by The Texas Engineering Experiment Station, College Station, Texas, and the film *Building for Learning* issued from the same source). Those who have studied these essays are aware of the importance which the author, working in the Southwest, attaches to *natural ventilation* by prevailing breezes. In a pair of schools for Blackwell, Oklahoma, of which the first is under construction, the author and his partners have seized the opportunity to practice what they have been preaching.



SOUTHWEST

SCHOOLS THAT UTILIZE THE PREVAILING BREEZE

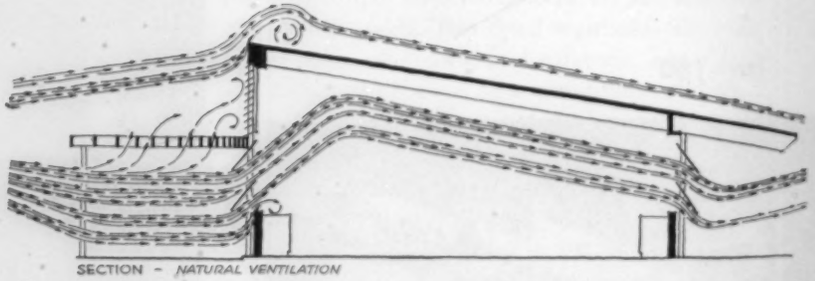
First Unit for Blackwell, Oklahoma

Caudill, Rowlett, Scott, Architects

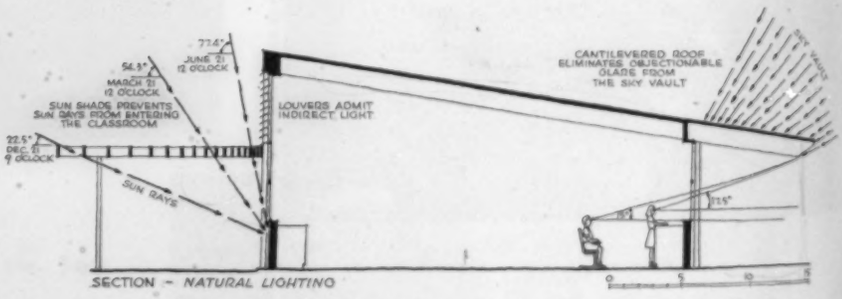
The preliminary plans, reproduced herewith, show classroom wings placed in accordance with the dictum that "the distance between groups should be no less than five times the height of the classroom." The first of the vertical sections shows graphically how an air stream has been found to travel by actual tests made at College Station with smoke candles. The result is different from that which is too often found drawn in on the diagrams of the unknowing. Thus a projecting member, such as a canopy or porch roof, seems to deflect the air stream in such a manner as to make a window opening directly above it almost useless as a device of ventilation; and air must be drawn through underneath.

In general, the Blackwell scheme bears a resemblance to the Fairfax school by Bamberger & Reid (Record, Jan. 1949). Corridors and outdoor classrooms are both to the south.

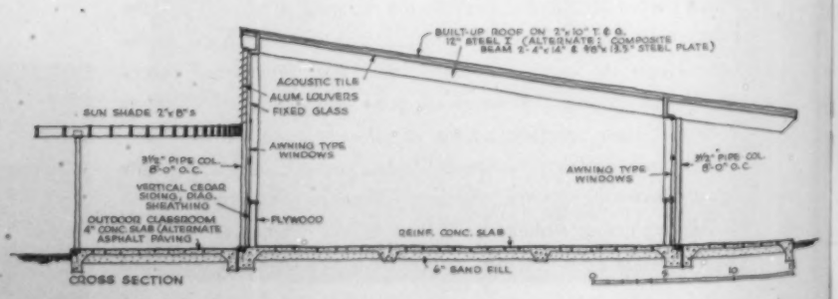
Plans call for steel frame, cavity brick wall construction, steel sash, concrete floor slabs with radiant heating.



SECTION – *NATURAL VENTILATION*



SECTION – *NATURAL LIGHTING*


BUILT-UP ROOF ON 2"x10" T & G
12" STEEL I (ALTERNATE: COMPOSITE BEAM 2'-4"x14" & 90"x(3.5" STEEL PLATE)
ACOUSTIC TILE
ALUM. LOUVERS
FIXED GLASS
SUN SHADE 2"x8"s
AWNING TYPE WINDOWS
3½" PIPE COL. @ 8'-0" O.C.
VERTICAL CEDAR SIDING, DIAG. SHEATHING
PLYWOOD
OUTDOOR CLASSROOM 4" CONC. SLAB (ALTERNATE ASPHALT PAVING)
REINF. CONC. SLAB
6" SAND FILL

CROSS SECTION

WATER-REPELLENT PRESERVATIVES FOR WOOD

By F. L. Browne, Chemist

Forest Products Laboratory*, Forest Service, U. S. Department of Agriculture

Although water-repellent preservatives and their related products are popularly regarded as recent developments, they have been in use for many years. Wood window sash have been treated with them for a decade and a half. During the wartime a number of new applications were found that stimulated wider interest in them.

Products of the kind are sold under various trade names; until recently there have been no recognized collective names for them. In 1948, however, the National Door Manufacturers' Association published suitable names and definitions for five kinds of products as follows: NSP water repellent for wood, NSP preservative for wood, NSP water-repellent preservative for wood, wood sealer, and preservative wood sealer. The letters NSP stand for "nonswelling, paintable," meaning the wood does not swell when the product is applied and can subsequently be coated with ordinary paints and varnishes.

All of these products are designed for treating wood quickly and with equipment that is simple, inexpensive, and readily available. The preferred method of treatment is by dipping, which requires dip tanks, but other methods of application also are used, such as brushing, spraying, mopping, and roller coating. Wood treated by such superficial methods takes up only limited amounts of the material applied, which penetrates only a short distance into the wood. Into the end-grain of pine sapwood, which is relatively easy to penetrate, the water repellents, NSP preservatives, and water-repellent preservatives may go as much as 2 or 3 in. but into the heartwood they seldom go as far as ¼ in. Into the side-grain even of sapwood the penetration rarely attains as much as 1/16 in. Wood sealers penetrate even less deeply.

With such limited penetration and absorption the superficial treatments cannot give wood the degree of protection or preservative obtainable by slower, more costly, but more thorough methods. These newer products, therefore, do not compete with the long established methods of wood preservation or with the more effective procedures for stabilizing the dimensions of wood. For severe conditions of service the more thorough methods remain more economical in the long run despite greater initial cost and inconvenience.

The newer products find their proper use where the conditions of service are not severe enough or the chance of adverse conditions arising are not great enough to justify the more thorough methods of treatment. A vast amount of wood falls in this category. In the past it has commonly gone untreated. Too often it has given poor service or has had to be repaired or replaced when a moderate degree of treatment would have kept it in satisfactory condition. The availability of the water-repellent preservatives and related products makes neglect of such treatment less easily excusable in the future.

General Considerations

The shallow penetration obtainable by superficial application makes it necessary to do all or practically all of the surfacing, cutting, and fitting of the wood before it is treated. After treatment little or no wood can be removed from any of the surfaces without laying bare untreated wood. If some cutting must be done subsequently, as in fitting windows or doors at the site or cutting pieces to length, the cut surfaces should be retreated before the parts are fastened in place. Delaying treatment until the carpenter work has been done may sometimes inconvenience closely scheduled production lines, but it has the advantage of saving waste in treating wood that eventually turns up as sawdust, shavings, cuttings, or rejections.

The best point for applying treatment in a production schedule comes after all cutting, fitting, and boring out before assembling the wood parts. Surfaces that will be concealed after assembly are then freely accessible to the treating solution. The water repellents, NSP preservatives, and water-repellent preservatives, however, have the property of penetrating well into even well fitting joints, especially if the application is by dipping. When desired, therefore, woodwork to be treated with these products may be assembled but not glazed before they are dipped. Sealers do not penetrate joints so well; they are best applied before assembling unless they are used chiefly for decoration rather than for protection.

Gluing should be done before any of these products, except the NSP preservatives, is applied. Water repellents and sealers tend to interfere with gluing by impairing the strength of the glued joints. On the other hand the preservatives that contain neither water repellents nor sealers cause little if any interference with gluing providing the wood has been dried long enough after treatment for all of the solvent in the preservative to escape.

Thorough drying to remove solvent is likewise necessary before the treated wood is painted. Sealers dry rapidly because they do not penetrate far into the wood and because they are often made with solvents that evaporate quickly. Even after the wood has been thoroughly dried, however, water repellents and water-repellent preservatives retard the drying of most coatings slightly and some of them seriously. The delay in the drying of finishes is

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* Maintained at Madison, Wisconsin, in cooperation with the University of Wisconsin. Part of the work on which this article is based was done in cooperation with the federal Housing and Home Finance Agency and another part in cooperation with the Office of Production Research and Development of the War Production Board.

troublesome in operations in factories with closely planned production schedules, especially if the finishes are lacquers. For ordinary painting of buildings the drying is not retarded enough to delay the painters unless dark-colored enamels, such as trim and trellis, porch and deck, or quick-drying enamels are applied directly on the treated wood. No such trouble should be experienced if the enamels are applied over priming paint or enamel undercoater, as they properly should be in any case.

Water Repellents for Wood

The nature of the essential ingredients in the commercial water repellents for wood is usually kept as a trade secret. Products having all of their important properties, however, might be made by dissolving 2 or 3 per cent by weight of paraffin wax and 5 or 10 per cent of resin in mineral spirits of suitable solvent power. The wax imparts the water repellency but it tends to interfere with subsequent painting or gluing of the treated wood. The resin largely overcomes the interference with painting but is not so successful in the matter of gluing. Almost any resin that is soluble in mineral spirits will serve. A drying oil such as linseed or tung oil may be used in place of part or all of the resin, but oil and resin are not first cooked together as in varnish making, because that would reduce the extent to which the product penetrates into wood. Mineral spirits is the volatile thinner commonly used in paints and varnishes; the grade needed for water repellents is one having good solvent power and a flash-point not less than 100° F. by the Tagliabue closed-cup method.

Water repellents retard changes in moisture content and in dimensions of wood. They furnish the maximum protection yet obtainable by superficial methods of application that leave the wood practically unchanged in appearance and susceptible to almost any of the decorative finishes generally used on wood. The treated wood may be varnished, stained and varnished, painted or enameled as may be decided upon later. Water stains, however, may not spread readily on wood treated with water repellent nor color it evenly.

Water repellents afford a practicable means of protecting wood against changes while it is being shipped from factory to place of erection or while it is held in storage. Such protection, however, should not be taken as an excuse for omitting the precautions that should normally be taken in handling fine woodwork.

Neither water repellents nor other protective coatings make wood waterproof. They do not alter the capacity of the wood to take up moisture or to swell proportionately. They merely delay the changes by making it harder for moisture to pass in or out through the surfaces. For wood exposed to even changing conditions of dampness and dryness such delay serves to hold the wood closer to an average moisture content and dimension than would be the case without protection. Protection is most effective when the conditions of exposure fluctuate rapidly; it becomes useless for prolonged exposure to a steady extreme of dampness or of dryness.

Water repellents afford wood better protection than can be assuredly obtained with a single application of other coating materials such as sealers, varnishes, paints, enamels, and lacquers. On the other hand water repellents give much less protection than can be obtained with two or more applications of surface coatings. But considerations of cost and the practicalities of fabrication usually limit the surface coatings to the surfaces exposed to view and leave the concealed surfaces entirely unprotected even though they may be accessible to moisture. Moreover, surface coatings do not last long on surfaces subject to mechanical wear and are unsuitable for nicely fitted, sliding joints such as between window sash and frame.

Water repellents, therefore, are particularly valuable for furnishing protection to those parts of woodwork that otherwise are generally left entirely unprotected. They effectively supplement but are not good substitutes for the older types of protective coatings.

NSP Preservatives

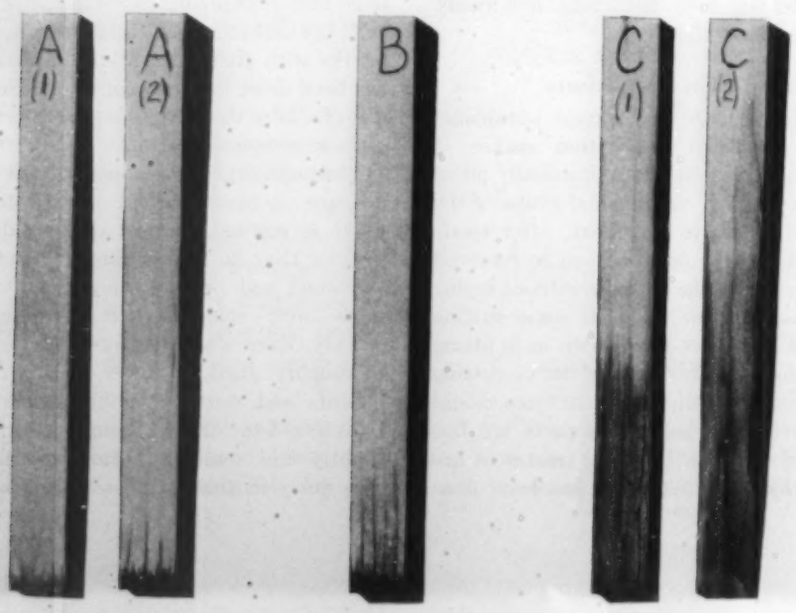
The NSP preservatives for wood are solutions of fungicides or fungicides and insecticides in volatile solvents, such as mineral spirits, that do not swell wood. The reliable commercial products disclose the kind and amount of fungicide that they contain. For treating window sash and millwork the National Door Manufacturers' Association accepts preservatives that contain not less than 5 per cent by weight of pentachlorophenol, tetrachlorophenol, chloro-2-phenylphenol, or their mixtures. Commercial preservatives also are made with other fungicides such as zinc naphthenate and, when its green color is acceptable, copper naphthenate.

NSP preservatives made with pentachlorophenol may contain a small amount of resin or nonvolatile oil to prevent blooming. Blooming is a deposition of crystals of pentachlorophenol on the surface of wood as it dries after treatment. It mars the appearance and may irritate the skin and mucous membranes of workers.

When applied by superficial methods the NSP preservatives guard wood ade-

(*Continued on page 174*)

Water-repellent preservatives (C1, C2) penetrate farther than sealers (A1, A2)



SECOND THOUGHTS ON RADIANT HEATING

Some do's and don'ts to insure good performance

By W. P. Chapman and R. E. Fischer†*

UNLIKE most innovations in the building industry, radiant heating had quick public acceptance. People wanted such a heating system — one that would "provide added comfort, reduce operating costs, be invisible and save space, and have the advantage of cleanliness." Yet while there is admittedly laboratory and field investigation to be done, the theory is far advanced and there are a great many facts known which, if utilized, will go a long way toward insuring good performance from a radiant heating system.

Most occupants of radiant heated structures are enthusiastic about their heating systems. Performance may not come up to expectations, however, if special considerations in the design of radiant heating systems are overlooked.

MEETING THE HEATING LOAD

The first requisite of a radiant heating system is that the heat from the available panel area be sufficient to meet the loss through the structure and to ventilation. In most cases, structures are insulated well enough for economy reasons to keep conduction losses low. High ventilation rates, whether due to infiltration or to forced air circulation consistent with fresh air requirements, can cause such excessive losses that discomfort results.

A common misconception is that since a large portion of the heat transfer from a panel into a room is radiation (ceilings 70 per cent radiation, 30 per cent convection; walls 56 per cent r., 44 percent c.; floors 50 per cent r., 50 per cent c.), the occupant will be kept comfortable by radiation although a large amount of heat is removed by ventilation. All heat losses still have to be made up by the panel, and when excessive quantities of heat are taken from the air, the panel area required to make up the heat — in the percentages listed — may be either unavailable or impractical.

When the ventilation rate is likely to exceed three air changes an hour, the design should be checked carefully to make certain that the heat from the panel is sufficient to take care of the total loss. A low rate of heat output is characteristic of radiant heating panels because of the limitation on panel surface temperatures[1] — to keep them within a comfortable range — and due to the lack of much air movement across the panel. Standard ratings are approximately:

Panel Location	Surface Temp., F	Heat Output, Btu/hr./sq. ft.	
		High	Average
Ceiling	120	84	80
Wall	100	65	60
Floor	85	40	36

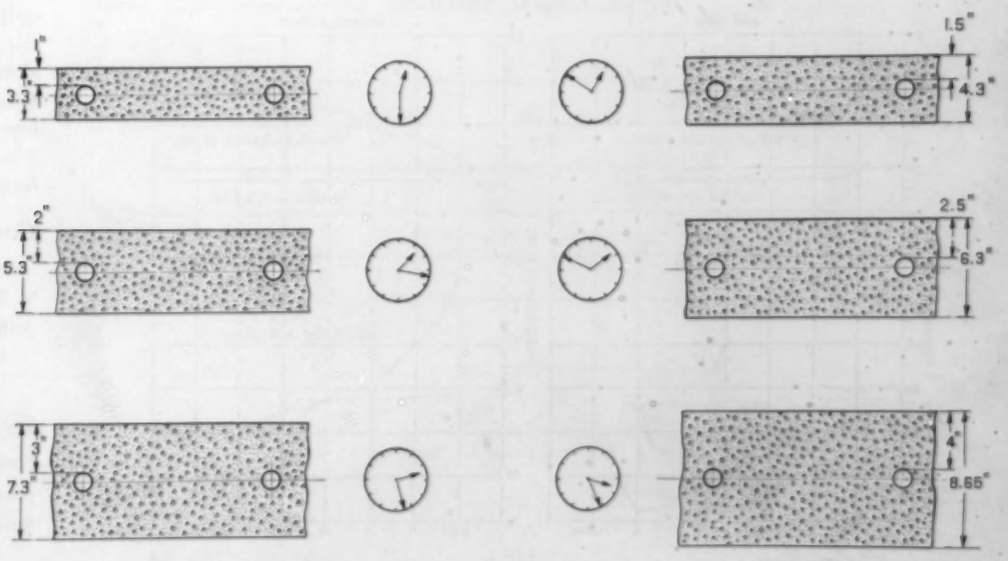
The problem of not having enough panel area is hardly ever encountered in houses, where ventilation rate is about one air change an hour, but may occur frequently in garages, warehouses and offices. Oftentimes in buildings like garages, methods must be devised to prevent infiltration — for instance, locating doors away from prevailing winds or in shielded spots. If this is not possible, then convectors may have to be installed so as to form a curtain of warm air across doorways that are frequently left open. In installations such as offices where people are located close together and forced ventilation is employed to remove stale air, it is advisable to temper the air when there are more than three air changes per hour.

The effect of excessive ventilation is best demonstrated by the following

* Product Engineering Dept., National Tube Co. (U. S. Steel Corp. subsidiary), Pittsburgh, Pa.
† Associate Editor, ARCHITECTURAL RECORD.

[1] Recommended surface temperatures: floor 85 F, wall 100 F, ceiling 110 F at 8 ft., 120 F at 9 ft. and over.

1



Effect of varying pipe depth in floor slabs is shown here. Heat output was assumed to equal the heat input at 12 o'clock; then the temperature was increased in pipe. Clocks indicate time when slab surfaces come up to a higher, constant temperature

examples. In some cases the panel temperatures required to get sufficient heat output would make occupants uncomfortable. In other cases where the panel temperature is kept within bounds, the panel area needed to get sufficient heat is more than that available. The "impossible" conditions are indicated by bold face type.

Example:

Room 10 by 20 by 8 ft. (clg.). Outside temperature designed for 0 F.

A. The entire floor (200 sq. ft.) is assumed as total available panel area; ventilation rate equals 2.8 air changes per hour.

	Panel Surface Temp., F	Insulating Efficiency	Panel Area Req'd
1.	85	excellent (U_e=0.04)*	200
2.	90	very good (U_e=0.08)	200
3.	100	good (U_e=0.16)	189

B. The entire ceiling (200 sq. ft.) is assumed as available panel area. Ventilation rate equals 2.8 changes per hour for cases 4 and 6 and 3.3 for cases 5, 7 and 8.

	Panel Area Req'd	Insulating Efficiency	Panel Surface Temp., F
4.	195	very good (U_e=0.08)	100
5.	213	very good	100
6.	205	good (U_e=0.16)	110
7.	217	good	110
8.	202	average (U_e=0.20)	120

In cases 2 and 3 the panel temperature would cause discomfort; in cases 5, 6 and 7 the panel area required to give sufficient heat output is larger than that available. In case 8 the panel area is close enough to that required, but the panel temperature exceeds that recommended for an 8 ft. ceiling.

It is true that heat loss due to ventilation is less with radiant heating because of the lower air temperature inherent with the system; and consequently less fuel is required to maintain comfort. It is not true, as can be seen from the foregoing examples, that a large ventilation rate poses no problem for radiant heating design.

RESPONSE TO CHANGING HEATING LOAD

Another prime requisite for a radiant heating system is that the surface temperature of the panel must respond to a change in the heating load — whether it be due to outside air temperature, wind velocity or solar radiation — so as to maintain always a comfortable environment. The rate at which the panel temperature has to respond depends on how fast heat is conducted through walls, roofs, floors; how large the glass areas are; and how much ventilation is introduced. For example, heavy masonry walls delay the effect of outside air temperature and absorbed solar heat on inside conditions. At the other extreme, changes in the amount of solar radiation transmitted through large glass areas and the effect of changes in the amount and temperature of ventilation are felt immediately. A proper evaluation of these will determine just how much time can be allowed for the panel surface temperature to change following a change in weather. Failure to do this often results in under- and overheating, especially in the spring and fall.

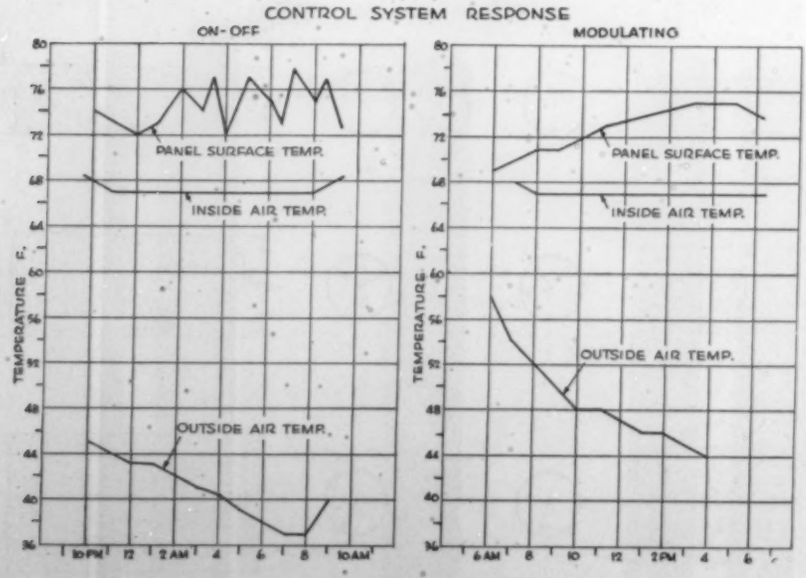
What determines how fast a panel will respond? There are two things to consider — the depth of the pipe coils (or warm air ducts) from the panel surface and the conductivity of the intervening material. Most panels are constructed with a cover of plaster or concrete which have high enough conductivity; of course no insulating plaster or concrete ever should be placed between the pipe and panel surface. When the coils are buried too deep in concrete, the panel response will be sluggish. When there is a demand for more heat from a panel, following a condition where heat input was equal to heat output, the surface temperature cannot change until every particle between the heating medium (pipe coils) and the surface has risen in temperature. Even if the water temperature is set in accordance with the outside air temperature, this still cannot offset panel sluggishness, or lag, as it is called. This is clearly demonstrated in Fig. 1 where the heat output was assumed to equal the heat input at 12 o'clock; at this time there was a demand for more heat and the heat input in the pipe coils was increased. The clocks show the time at which the *surface* temperature comes up to a higher, constant value. (Heat output again equals heat input.) Where the coils were buried 1 in. in a 3.3 in. slab it took a half hour for the surface temperature to respond to the increased input; and in the worst case, coils buried 4 in. in 8.65 in. slab, it took nearly *three hours and a half*.

Controls

Since the function of a thermostat is to "request" heat from the panel until comfort conditions are met, the effec-

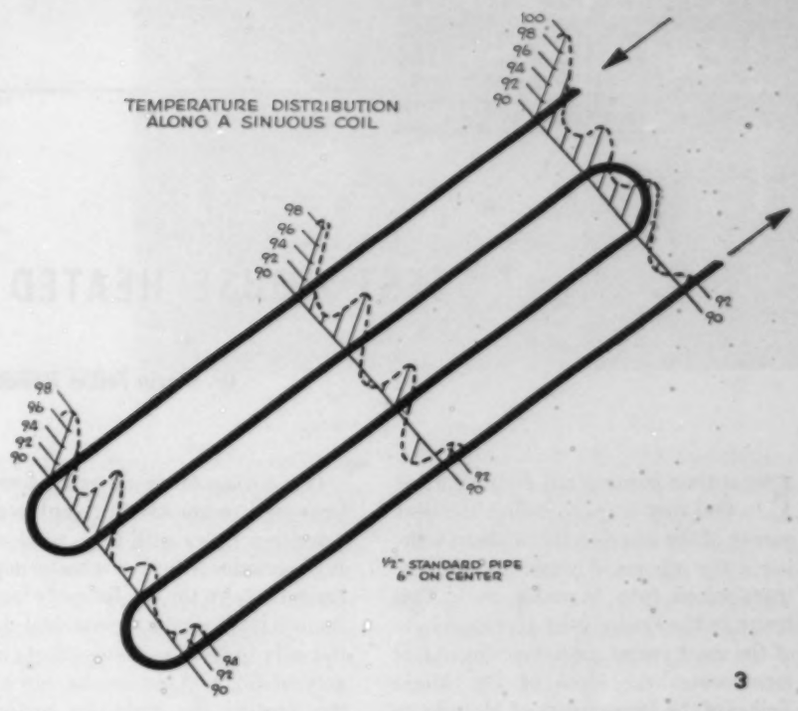
* U_e X area of unheated room surfaces X temperature difference between inside and outside air = heat loss by conduction.

2



Although the change in panel surface temperature is smoother with a modulating control than an on-off control, the fluctuation with the latter is still slight

Surface temperature of an actual radiant heating panel varies, as shown here, both parallel to and in between the pipe coils



3

tiveness of different arrangements should be examined. Under conditions of ideal comfort in radiant heating, the inside air temperature decreases as the outside air temperature decreases. This is because the additional heat loss is made up in great part by radiation, instead of the mass of air alone being heated. This suggests the need for a thermostat that would be reset in accordance with outside temperatures. It can be shown, however,[2] that the inside temperature variation would rarely be more than two degrees during a daily heating period, which is really inconsequential; therefore, a control device set at a constant inside air temperature will suffice for most installations.

Modulating and on-off controls used with hot water radiant systems operate just as their names imply. With the modulating control, either the supply and return lines are mixed in a proportion so as to meet the heating demand or else the fuel supply is modulated, for instance operating one or several burners according to the heating load.

With an on-off system (assuming continuous pump operation), the additional heat required is supplied at full capacity. The only difference between the two systems is that the panel surface temperature would fluctuate to a lesser degree with the modulating system than with the on-off control. As can be seen from Fig. 2,[3] the panel temperature variation with the on-off control is quite small; so it is a question of whether the improved performance is worth the added cost. The modulating system chosen for comparison with the on-off control sets the boiler water temperature according to the outside air temperature and then resets the temperature of the water going to the panels by means of a modulating inside air thermostat.

Pump Operation

It is recommended that the pump operate continuously. If it operates periodically, there will be added difficulties in the control of the system. For example, when the inside air thermostat responds to a drop in temperature and actuates the pump, heat is supplied until the air temperature is brought back to the value set by the thermostat, and then, in addition, stored heat in the panel pushes the air temperature and panel surface temperature beyond that desired. If the pump operates continuously there is never a period of sudden temperature change to hinder response of the system.

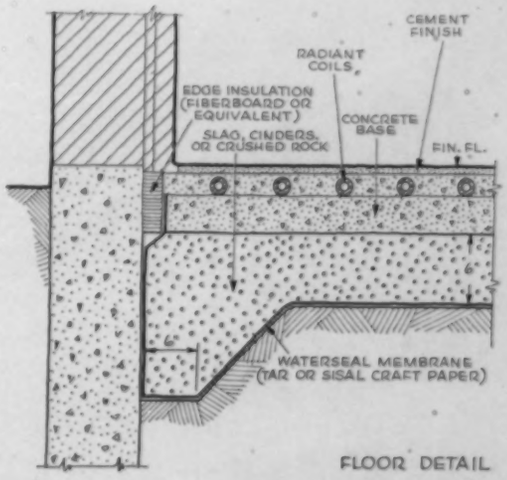
Uniformity of Panel Surface Temperature

The degree of panel surface temperature uniformity that is possible is governed by allowable expense and the rate at which a panel has to respond to changing heating load. A hot water panel as is shown in Fig. 3 will be taken as an example in illustrating the variations that exist. It is evident that there is a temperature variation in a direction parallel to the pipe and in between (or at right angles) to the pipe, the latter variation being by far the greatest.

The parallel variation can only be reduced by increasing the flow rate; and then the flow rate must be doubled to reduce the variation by one half, and this is usually prohibitive. The most important variation, that in between the pipes, can be reduced by (1) increasing the "cover" (plaster or concrete) over the coil or (2) decreasing the pipe spacing. Of these two means, the second is the best since the response of the panel

(*Continued on page 176*)

Detail of floor slab radiant heating designed to minimize back-side heat losses



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FLOOR DETAIL

[2] "Simplifying Comfort Control for Radiant Heating," W. P. Chapman and R. E. Fischer, Heating and Ventilating, June, 1948.

[3] Fig. 2 is from "Response and Lag in the Control of Panel Heating Systems" by F. W. Hutchinson, Heating, Piping and Air Conditioning, Feb., 1947.

TEST HOUSE HEATED ONLY BY SOLAR HEAT

Dr. Maria Telkes Residence, Dover, Mass.; Eleanor Raymond, Architect

From time immemorial man has tried to find new ways to utilize the heat energy of the sun directly, without waiting a few thousand years for it to be transformed into burnable fuel. This house, in the Boston area, represents one of the most recent solar experiments. It incorporates the ideas of Dr. Maria Telkes of the Department of Metallurgy of M.I.T., but is sponsored by Miss Amelia Peabody as a private project.

Paul Davis Photos

It is not a solar house as the term has been used commonly in recent years to describe a house with large windows. It is the genuine article — a house depending entirely on the sun for space heating. As such it is bound to be watched closely, not only to see how man's efforts in this general direction are coming, but also to see whether the particular method of heat storage which is used will win out.

The heating system consists of a huge solar heat collector, air ducts to convey the heat, and "heat bins" filled with chemical for storing the heat, from which it is distributed to the rooms as needed.

The heat collector, running the full length of the house, consists of double sheets of glass 10 ft. high with air spaces between, backed by a thin metal sheet to trap the heat. Behind the sheet, enclosed with a well-insulated wall, is an air space forming a duct. The air heated by the metal sheet is circulated by fans to the heat bins located on the first floor.

Each heat bin serves to heat the two rooms which adjoin it, except one which heats only the living room. There is a wall register in every room with a thermostatically controlled fan to convey warm air into the room. The cold air is drawn back into the heat bin through a return-air register. A small amount of heat is freely transmitted into the rooms from the walls of the heat bins as radiant heat, enough to keep the rooms warm on milder days. Thus convected and radiant heat are combined.

The test feature of this system is the method of storing the heat. Each heat bin is simply a small warehouse filled with metal drums of a sodium compound whose properties for absorbing and giving off heat are under test. The warm air circulated between the metal drums melts the chemical, which enables it to store heat at a constant temperature. When the heat is drawn out, the chemical re-crystalizes, returning the absorbed heat to the air. This is the "heat of fusion" method of storing solar heat.

The heating system is so designed that the heat it obtains from the sun in December, January and February is equal to the heat needed during these months

Progress pictures here show heat collector installed across attic front. Double glass panels, 10 ft. high, with an air space between, invite the sun to heat a thin metal panel behind the glass. Within the limits of black and white photography the photographer has tried to show that the glass reflects the tones and colors of the sky; thus the house does not appear as top-heavy as might be supposed

Right. Massachusetts Institute of Technology has just announced the completion of its own sun-heated house as part of its continuing research in this field. The heating system, using water as the medium, consists of roof collectors, attic storage tank, radiant ceiling, panel units, pumps and controls. Further details will appear in the April issue

to maintain the standard 70 degrees F. inside the house even if the temperature is zero outside. Naturally allowance has to be made for a succession of sunless days. An analysis of the sunshine records of the nearby Blue Hills Observatory shows that a heat storage capacity for ten average winter days will be sufficient to assure an adequate supply of heat for any number of consecutive sunless days statistics have shown to be probable.

The heat collected by the heating system in this sun-heated house on an average winter day is equal to the heat obtained by burning 70 pounds of coal; on a clear winter day it may equal 140 pounds of coal. The house is naturally well insulated to diminish heat losses. Boston, or places of similar sunshine and temperature conditions, appears to be the northern limit for the practical working of this system. In less severe climates the size of the collector and the heat storage bins can be made smaller, with fewer restrictions on the size of the house.

The method of solar heating used in this house was developed by Dr. Maria Telkes. Dr. Telkes will live in the house this winter and will continue the tests and the collection of data on solar heating which she has been conducting for some time.

The house was designed by Eleanor Raymond, a Boston architect. Miss Raymond had to meet the problem of designing a liveable house within the restrictions imposed by the heating system. The heat collector had to face south and had to be large enough to collect the required heat for this particular house in this climate. This meant that an area equal to the entire south wall had to be given over to the heat collector. But as there must also be sunlight in the living space, that is, windows, the problem was solved by moving the collector up to become the south wall of an attic. The space in this attic story can not be heated but serves the purposes of both attic and cellar (the house is built on an insulated concrete slab). Farther south, where a smaller collector could be used, greater flexibility in the design of the house would be possible. Affecting the design of the house too was the fact that for the Boston climate 4 linear ft. of the collecting glass will produce only enough heat to serve a space 4 ft. wide by about 17 ft. deep. This meant that the house could be only one room deep. Although the house has a fireplace, this is solely an aesthetic feature and is not depended on for the production of heat.

Exact accounts of the costs of this solar system are being kept so that comparison may be made with the cost of conventional fuel-burning systems.

A fan in the wall between a bedroom and the heat bin supplied heat to the room under the dictates of a thermostat. Note that the bedroom ceiling has aluminum reflective insulation

This closet full of "insecticide" (it says on the cans) becomes the "heater room". It is one of three "heat bins" in which solar heat is stored by the heat-of-fusion method in a sodium compound. The metal plate is a baffle to guide heated air in a longer route. Right-hand picture shows duct work behind the heat collector plate

MODULAR DESIGN DATA FOR WOOD WINDOWS

(*Continued on page 143*)

MODULAR wood window sizes listed on the Time-Saver pages that follow are those adopted as industry standard by the National Door Manufacturers Association. The standardization of these sizes substitutes one national-wide standard for ten different market practices,— allowances of wood over glass; Ponderosa Pine stock windows are widely produced in accordance with the sizes. The window opening sizes established were designed to meet the basic requirements of the American Standards Association Project A62*.

The basis for coordination of the window sizes with other building products is the 4 in. module or increment. The window sizes are coordinated by determining, through a study of modular installation details, one size that works well for a certain type. Other sizes for that type must then be equal in width and height to the first size plus or minus some 4 in. multiple. This does not necessarily mean that the window dimensions have to be in 4 in. multiples. The window sizes listed herewith have widths in multiples of 4 in. and heights in multiples of 4 in. plus 2 in. These sizes were selected because they included a maximum number of present stock windows.

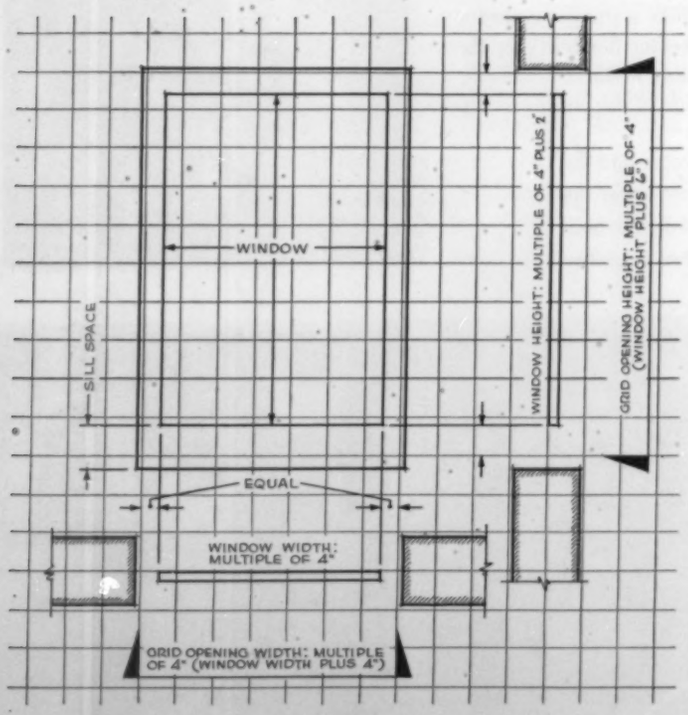
Coordination of windows is simplified a great deal by consistent referencing to grid openings. The position on the grid for the edges of wall openings may differ considerably for various types of construction. Thus it is useful to identify the lines which are used for layout and referencing on the grid as the *grid opening*. As a result of referencing modular wall and window details to the same grid opening, many combinations are indicated by a small number of drawings.

Windows are placed in a symmetrical grid position horizontally so that modular details are the same at each jamb. This does not apply vertically because the head and sill details are essentially different. The usual space between the window and grid opening is 2 in. at the jamb and 2 $\frac{9}{16}$ in. at the head. The sill space varies, depending on whether the construction is modular masonry, custom masonry, wood frame, etc.; 4 in. is sufficient to include all wood sill details. It is desirable to have a size of grid opening for each window size that will apply to any sill. A symmetrical grid position for walls simplifies dimensioning, estimating, quantity take-offs and the determination of actual dimensions when needed. It also reduces the variety of lengths for frame members and other parts.

The only inconsistency with the modular program arises in the case of multiple window openings in masonry walls. If all mullions were made 4 in. wide, there would be no complication in any case. But mullions are 6 in. wide for conventional weight-type balances and need be no more than 2 in. for the streamlined mullions used with patent balances. Thus when 2 or 6 in. mullions are used, there have to be an even number, or else a 2 in. masonry offset will be required at one jamb. In brick walls this is done by either cutting the brick at one jamb or providing three-quarter length brick. In cement block walls built with standard 16 in. nominal length units, the offset cannot be produced, so either an even number of mullions must be used, or for patent balances a 4 in. auxiliary mullion can be employed.

*Project A62 for Coordination of Dimensions of Building Materials and Equipment, jointly sponsored by AIA and The Producers Council, Inc.

Adaptation of modular wood window to the grid layout


WINDOW
SILL SPACE
EQUAL
WINDOW WIDTH: MULTIPLE OF 4"
GRID OPENING WIDTH: MULTIPLE OF 4" (WINDOW WIDTH PLUS 4")
WINDOW HEIGHT: MULTIPLE OF 4" PLUS 2"
GRID OPENING HEIGHT: MULTIPLE OF 4" (WINDOW HEIGHT PLUS 6")

WELDING GUN ATTACHES CORRUGATED ASBESTOS TO STRUCTURE

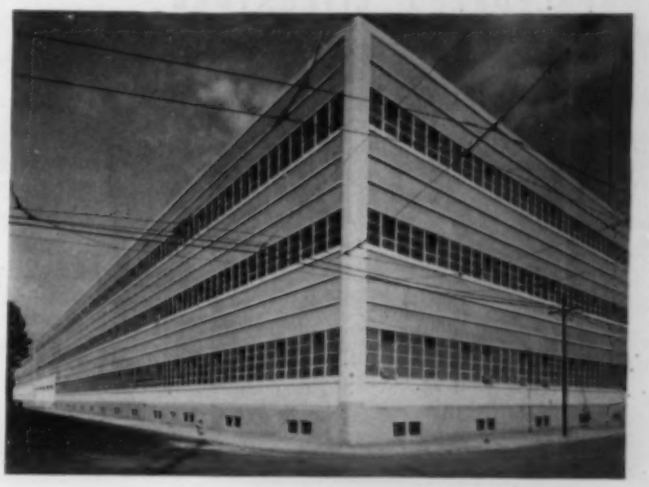
Application of corrugated sheet asbestos (Transite) with the lightweight, automatic *Nelson stud welding gun* is reported to have achieved a distinctive streamlined effect for the exterior of the new two-story carton plant with basement and three-story factory addition to the Sunshine Biscuit bakery at Dayton, Ohio.

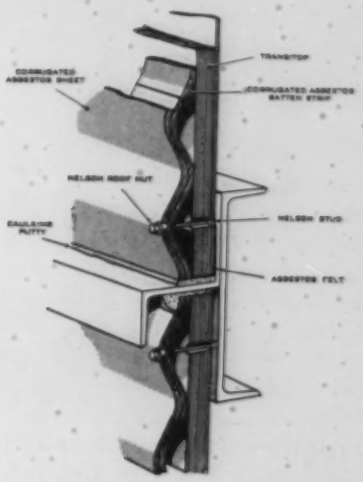
Studs end-welded to the Z-bars with the Nelson gun secured the siding to the struts, making it possible for installation of all sidewall materials to be handled from the outside and eliminating exposed fasteners or clips on the inside.

One-inch panels of insulating board (Transitop) surfaced on the inside with ⅛-in. veneer (Flexboard) were used for insulation. Around the inside, the outside and the bottom of these insulating panels, where they were set into a layer of caulking putty, were wrapped sheets of 15-lb. asbestos felt in a U-shape.

On the outside, in the same bed of putty, the corrugated asbestos sheets were then placed, and holes were drilled at regular intervals to facilitate installation of the Nelson studs, which extend through the siding and insulating board to the structural supports.

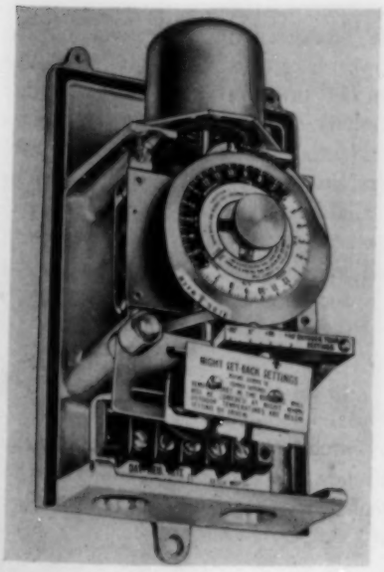
To provide uniform weather protection and an even surface overall, corrugated back batten strips were installed at joints. Nelson Stud-Welding Division, Morton-Gregory Corp., Lorain, Ohio.





Corrugated sheet asbestos, achieving a streamlined effect on the exterior of the factory addition to Sunshine Biscuit bakery, Dayton, Ohio (above), was secured to steel members through use of the Nelson stud and automatic welding gun. Detail (right) shows how siding was secured, making possible installation of all side-wall materials from the outside

HEATING CONTROL SET AT TIME BUILDING IS TO BE WARM



Now in production is a weather-actuated regulator for building heating designed to set back inside temperatures at night and still insure adequate warmth in the morning, regardless of outside temperature change.

The *Weather-Chron*, wired into the regular room thermostat circuit like any other clock switch, is set, not for the time heating is to start, but to the time the building is to be warm every morning.

Weather-actuated regulator starts heating system so that building will be warm at a certain time in the morning regardless of change in outside air temperature

According to the manufacturer, Weather-Chron automatically changes the time heating starts with the changes in weather. On the coldest nights, when outdoor temperatures drop below a preselected level, the device is reported to hold building temperatures at daytime level throughout the night. When outdoor temperatures rise above 65 F., heating is eliminated.

Daytime building temperatures are maintained by the regular room thermostat at comfort level. Automatic Devices Co., 53 W. Jackson Blvd., Chicago 4, Ill.

(*Continued on page 180*)

MANUFACTURERS' LITERATURE

Insulation

Silvercote's Handbook of "U" Values. Lists large number of heat transmission coefficients ("U" values) for various types of wall, floor and ceiling construction, including the coefficients for constructions using six different types of reflective insulation made by Silvercote.

A unique feature of the booklet, according to the manufacturer, is that it lists both winter and summer insulation values. The coefficients are reported to have been calculated in accordance with FHA procedure. The manufacturer's reflective insulations are described; three of these are thin sheet types and three others are of the blanket type. 108 pp., illus. Silvercote Products, Inc., 161 E. Erie St., Chicago, Ill.

Heating System Controls

Sarcotherm Weather Control for Hot Water and Radiant Heating (Technical Bulletin No. 1). This is the first in a series of bulletins designed to assist architects and engineers in the selection of appropriate controls for radiant heating systems. Includes descriptions and wiring diagrams of new thermostats developed especially for radiant heating. 8 pp., illus. Sarcotherm Controls, Inc., Empire State Bldg., New York 1, N. Y.

(1) Electronic Moduflow; (2) Zone Control and Individual Room Control. The first booklet describes a "supersensitive" electronic control system designed to vary the length of the "on" and "off" periods of the burner in direct proportion to the heating load. Components of the system and typical applications are illustrated and described. Diagrams are included for gravity and forced warm air and warm water, steam and radiant panel systems. The second booklet tells how zone or individual room control is accomplished for forced warm air and hot water and radiant panel applications. 8 pp. each, illus. Minneapolis Honeywell, Minneapolis 8, Minn.

Carpet Anchoring Device

Smoothedge Carpet Gripper. Describes method for installing wall-to-wall carpeting without the use of tacks. Narrow strips of plywood containing two rows of pins set at a 60° angle are installed level with the padding at the edge of the carpet. The pins penetrate the warp of the carpet to hold it rigidly in place. Sketches show how the strips are installed for both rolled and sealed edge finishes, and how they can be used for both wood and concrete floors. 4 pp., illus. The Roberts Co., 1536 N. Indiana St., Los Angeles 33, Calif.*

Incinerators

Incinerators: The Proper Type for Each Purpose. Covers complete line of flue-fed incinerators for residential, industrial and municipal use. Models are shown for installation in basements of residences and for multiple floor installation in apartments, hospitals, hotels and schools. The heavy-duty types are available in capacities ranging from 50 lb. per hr. to 100 tons per day. Specifications and detailed drawings are included. 8 pp., illus. Morse Boulger Destructor Co., 205-A E. 42nd St., New York 17, N. Y.*

Wood-Plastic Material

Weldwood Catalogue. Newly issued catalogue on *Weldwood* products lists and illustrates new items in the line such as fire-resistant doors, *Plankweld*, *Weldwood* mouldings, several new wood species — Korina, American Elm and Vertical Grain Cedar, and two new finishing materials. 32 pp., illus. United States Plywood Corp., Weldwood Bldg., 55 W. 44th St., New York 18, N. Y.*

Plaster

Ohio Autoclaved Finishing Hydrated Lime. Pamphlet points out special features of autoclaved hydrated lime which is reported to need no soaking and to have greater yield than ordinary hydrated limes. Preparation instructions are given. 4 pp. The Ohio Hydrate and Supply Co., Woodville, Ohio.

Toilet Compartments

Sanymetal Toilet Compartments. (Catalog No. 68.) Five types of toilet compartments are illustrated — overhead braced, ceiling hung, floor supported, standard flush type and standard panel type. A color chart shows the 21 different shades available for porcelain and baked-on enamel over steel. Other products catalogued are hospital cubicles, shower cabinets, dressing room compartments and hardware. Advantages are listed and extensive construction details and specifications are given. 20 pp., illus. The Sanymetal Products Co., Inc., 1701 Urbana Rd., Cleveland 12, Ohio.*

Hospital Communication

Auth Hospital Bulletin No. 170. Typical specifications and wiring diagrams on such hospital and institutional equipment as call systems, paging systems, emergency alarms, and intercommunicating telephone systems. Two pages are devoted to architects' symbols. 18 pp., illus. Auth Electric Co., 34-20 45th St., Long Island City 1, N. Y.

Wall, Ceiling Panels

New Interiors for Old. A collection of 79 repair and remodeling ideas using *Upson* wall and ceiling panels. Besides containing suggestions on how to cover cracked plaster with Upson materials, the booklet is profusely illustrated with pictures showing color schemes in rooms where Upson wall and ceiling panels have been applied. Color suggestions are given for predominant, secondary and accent colors. The various types of panels available are described and dimensions given. Diagrams show a variety of ceiling and sidewall panel designs. Accessories such as fasteners, mouldings and ornaments are included. 32 pp., illus. The Upson Co., Lockport, N. Y. 25 cents.

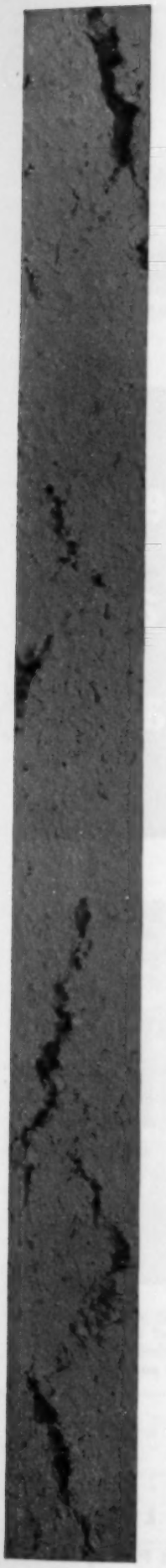
Wood

Douglas Fir of the Western Pine Region. Booklet on properties, uses and grades of Douglas Fir. General information provided covers appearance, weight, working stresses, shrinkage, nail holding power, ease of working, ability to take finishes, preservation and gluing. Other sections describe and picture various residential, commercial and heavy construction uses. The different grades available are shown with full page pictures accompanied by a description of the material and a general outline of grading rules. 52 pp., illus. Western Pine Assn., Yeon Bldg., Portland 4, Ore.*

Typical Designs of Timber Structures. This book, prepared especially for use by architects and engineers, contains 88 new, typical designs and valuable technical information. Modern methods of timber construction using *Teco*

(Continued on page 198)

* Other product information in Sweet's File, 1949.



Here is

FISSURETONE

TRADE MARK

FISSURED MINERAL FIBRE TILE

● Developed and produced by the world's largest manufacturer of Sound Conditioning products, FISSURETONE brings architects and designers an entirely new acoustical medium, perfectly suited for any type of public or private, commercial or domestic building.

Highly sound absorbent, this completely and totally new mineral fibre tile is both smart and dignified in appearance. The beautiful fissured surface rivals the finest travertine and is factory-finished in a soft, flat white of high light-reflection rating. FISSURETONE has the paintability and cleanability inherent to products of this type.

Fissuretone is lightweight, rigid and incombustible. Its safety, effectiveness and unusual beauty make FISSURETONE equally suitable for both traditional and modern interiors.

Now—architects who want something really "different" can design dignified quiet into any room, right along with attractive style and perfect taste. Both functional and decorative, FISSURETONE again marks the consistent leadership of Celotex, creator and producer of the most wanted, needed and widely accepted line of Sound Conditioning products.

ACOUSTI-CELOTEX

REGISTERED U. S. PAT. OFF.

Sound Conditioning

PRODUCTS FOR EVERY SOUND CONDITIONING PROBLEM

●

Sales Distributors Throughout the World
In Canada: Dominion Sound Equipments, Ltd.

THE CELOTEX CORPORATION
120 South La Salle Street
Chicago 3, Illinois

FISSURETONE'S new and "different" random-fissured surface gives a beautiful new pattern and style to Sound Conditioned ceilings.

G-E flight test hanger at Schenectady, N. Y., used for maintenance, testing and development. Marcus T. Reynolds, architect; Heating Maintenance Corp., heating contractors.

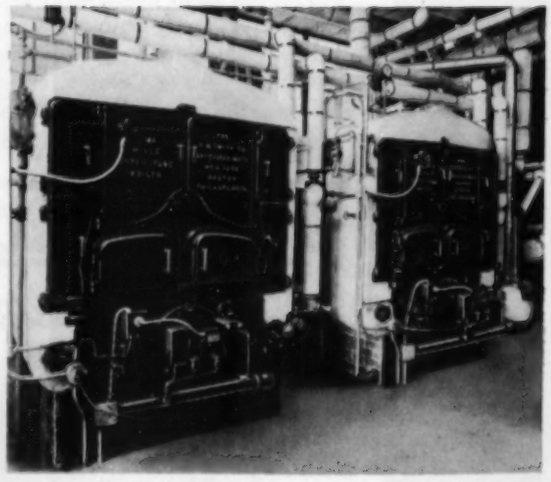
How to heat almost an acre of hangar

Heating the mammoth General Electric flight test hangar at Schenectady, N. Y., presented — as it always does in buildings of this type — the serious problem of how to maintain reasonably uniform temperatures despite very high ceilings and frequent air changes due to the opening and closing of hangar doors.

Consulting Engineer J. L. Ottenheimer solved the problem by specifying a radiant heating system installed in the concrete floor to maintain a comfortable temperature which is recovered unusually fast after hangar doors have been open. In spite of the 45-foot ceiling, a breathline temperature of only 60° has proved comfortable, and ceiling temperature is actually 2° lower, representing a considerable saving in fuel.

Two H. B. Smith No. 440 cast-iron sectional boilers heat the radiant floor panels in a manner which engineers have come to expect from these proved and tested Smith products. Their efficiency with heavy-oil, flexibility, and economy contribute much to any heating system. Their negligible maintenance costs, easy installation, and long-life expectancy should be considered no matter what the size of the job.

H. B. Smith boilers are being selected more and more for the difficult heating jobs where only the *best* equipment will do.



Two H. B. Smith No. 440 Mills water tube boilers, fired by heavy-oil burners, furnish steam for the heat exchanger from which water is circulated to the panels.

H.B. Smith

CAST-IRON BOILERS

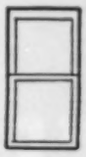
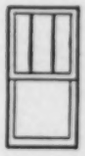
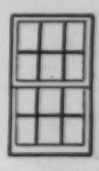
THE H. B. SMITH CO., INC., 62 Main St., Westfield, Mass., Offices and Representatives in Principal Cities

MODULAR DESIGN DATA FOR WOOD WINDOWS

(Continued from page 138)
(Continued on page 145)

CHECK RAIL WINDOWS, 1⅜"

Window opening sizes are in bold face type
Glass sizes are in ordinary type.

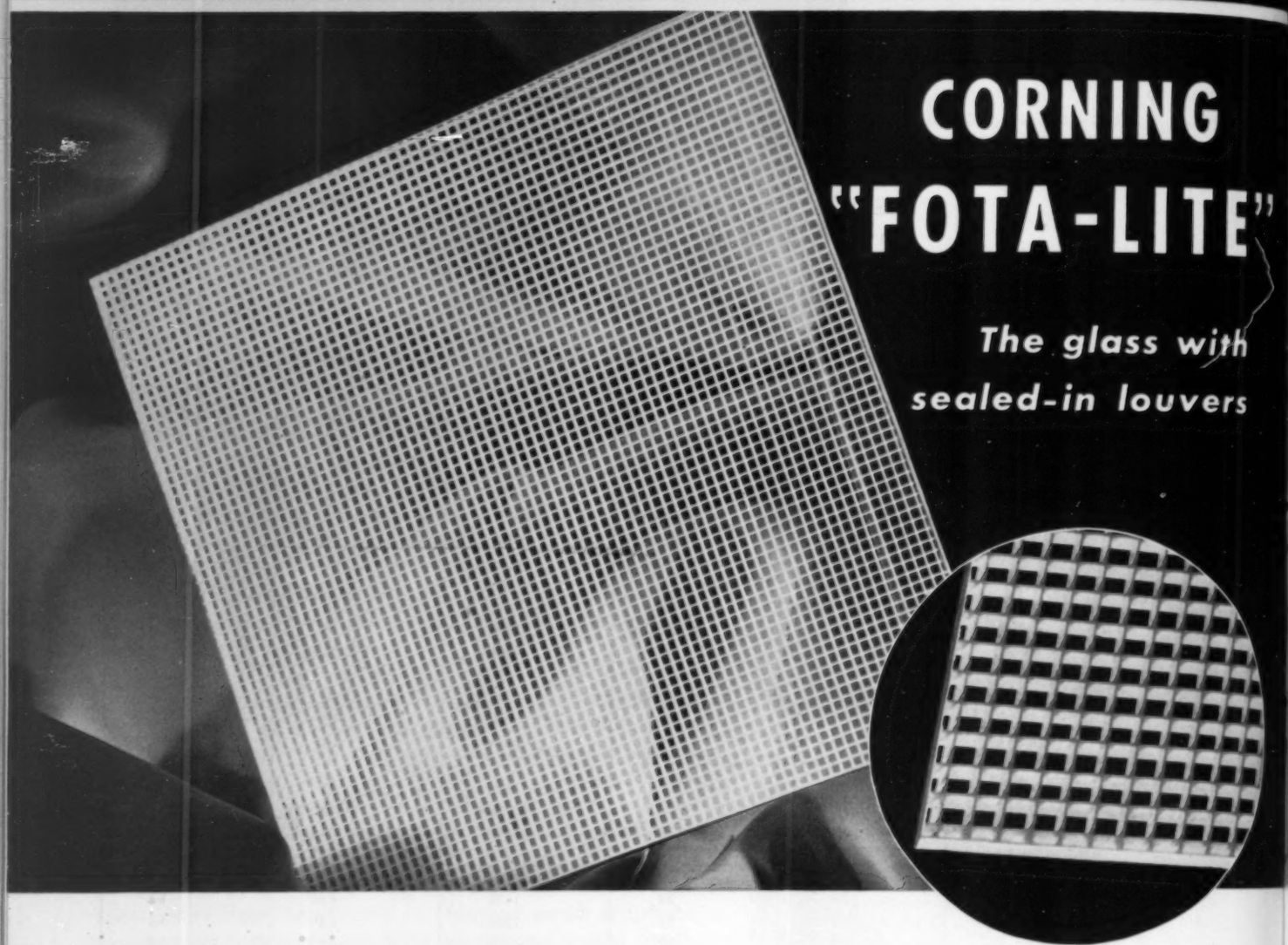
WINDOW OPENINGS	 2 Lt.	 Top 3 Lt. W.	4 Lt. H.	Top 6 Lt.	 12 Lt.
1-8 x 3- 2	16 x 16		16 x 7¾		
3-10	20		9¾		
4- 6	24		11¾		
2-0 x 2-10	20 x 14	6½ x 14	20 x 6¾	6½ x 7	
3- 2	16	16	7¾	8	6 21/32 x 8
3- 6	18	18	8¾	9	9
3-10	20	20	9¾	10	10
4- 2	22	22	10¾	11	11
4- 6	24	24	11¾	12	12
4-10	26	26	12¾	13	13
5- 2	28	28	13¾	14	14
2-4 x 2-10	24 x 14	7 7/32 x 14	24 x 6¾	7 7/32 x 7	
3- 2	16	16	7¾	8	8 x 8
3- 6	18	18	8¾	9	9
3-10	20	20	9¾	10	10
4- 2	22	22	10¾	11	11
4- 6	24	24	11¾	12	12
4-10	26	26	12¾	13	13
5- 2	28	28	13¾	14	14
2-8 x 2-10	28 x 14	9 5/32 x 14	28 x 6¾	9 5/32 x 7	
3- 2	16	16	7¾	8	
3- 6	18	18	8¾	9	
3-10	20	20	9¾	10	9 11/32 x 10
4- 2	22	22	10¾	11	
4- 6	24	24	11¾	12	12
4-10	26	26	12¾	13	13
5- 2	28	28	13¾	14	14
		Top 4 Lt. W.		**Top 8 Lt.**	**16 Lt.**
3-0 x 2-10	32 x 14	7 13/16 x 14	32 x 6¾	7 13/16 x 7	
3-10	20	20	9¾	10	7 13/16 x 10
4- 6	24	24	11¾	12	12
4-10	26	26	12¾	13	
5- 2	28	28	13¾	14	14
3-4 x 4- 6	36 x 24	8 13/16 x 24	36 x 11¾	8 13/16 x 12	8 13/16 x 12
4-10	26	26	12¾	13	13
5- 2	28	28	13¾	14	14
3-8 x 4- 6	40 x 24	9 13/16 x 24	40 x 11¾	9 13/16 x 12	9 13/16 x 12
5- 2	28	28	13¾	14	14

Note: The windows on this page are made ⅛ in. narrower and ¼ in. shorter than window opening sizes listed. Dimensions for wood parts such as stiles, muntins, etc. are face measurements.

Stiles	1 29/32"	**St.** 1 29/32"	**St.*** 1 21/32"
Top Rail	1 29/32"	**T.R.** 1 21/32"	**T.R.** 1 21/32"
Bottom Rail	3"	**B.R.** 3"	**B.R.** 2 ¾"
Vertical Bar	3/16"	**V.B.** 3/16"	**V.B.** 3/16"
Horizontal Bar	7/16"	**Mun.** 3/16"	**Mun.** 3/16"
Check Rail	1 3/32"	**C.R.** 1 3/32"	**C.R.** 1 3/32"

* Stiles for 16 lt. sash are 1 29/32 in. Other window parts are the same.

Something *Really* NEW in lightingware



CORNING "FOTA-LITE"

The glass with sealed-in louvers

Now you can get "egg crate" fluorescent lighting effect *without the egg crate!* Corning "Fota-Lite" is a new glass in which vertical louvers are photographically transferred to the full thickness of the glass.

EASY TO CLEAN. "Fota-Lite" presents a smooth surface which you can wipe clean quickly—something that is impossible with ordinary exposed louvers. Since you can completely enclose the fixture, both tubes and reflectors also remain clean. Thus, you never lose original efficiency through the accumulation of grime and dust.

HIGH EFFICIENCY. Brightness at high angles is low. Yet, the transparent area is comparable to the finest crystal. Light directed vertically is almost unrestricted but a slight surface diffusion obscures tubes and reflectors. The 45° cut off is obtained within the thickness of the glass (⅛") instead of bulky and costly louvering materials.

NO COLOR CHANGE. The opalescent louvers are non-selective in color transmission and as they are sealed within the glass surface, discoloration is impossible. This is important in maintaining original color values.

CORNING means research in GLASS

PYREX

SEE this sensational new development at the Corning Exhibit, International Lighting Exposition, Booth No. 13, Hotel Stevens, Chicago, March 29 to April 1, or write for further information.

LIGHTINGWARE

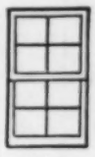
CORNING GLASS WORKS, CORNING, NEW YORK

MODULAR DESIGN DATA FOR WOOD WINDOWS

(Continued from page 143)

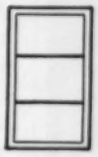
Window or sash opening sizes are in bold face type; glass sizes are in ordinary type.

PLAIN RAIL WINDOWS 1⅛"

St. . . . . 1 21/32" T.R. . . . . 2 3/16" B.R. . . . . 2 3/16" M.R. . . . . 1 3/32" V.B. . . . . 7/16" Mun. . . . . 3/16"	 8 Lt.
1-8 x 3-10 **2-0 x 4- 6** **2-4 x 5- 2**	8 x 10 10 x 12 12 x 14
St. . . . . 1 21/32" T.R. . . . . 2 3/16" B.R. . . . . 2 3/16" M.R. . . . . 1 3/32" V.B. . . . . 3/16" Mun. . . . . 3/16"	**12 Lights 3 Wide**
2-4 x 3-10 **4- 6** **2-8 x 4- 6** **3-0 x 4- 6**	8 x 10 12 9 11/32 x 12 10 21/32 x 12

Note: Windows are made ⅛" narrower and 1/16" shorter than opening sizes given above.

CASEMENT SASH, 1⅜"

SASH OPENING	 1 Lt.	 3 Lt. H.	4 Lights High	 6 Lt. 2 W.	8 Lights 2 Wide
1-3½ x 3- 2 **3-10** **4- 6**	12 x 33 41 49	12 x 10 13/16 13½	12 x 10 1/16 12 1/16	5⅞ x 10 13/16 13½	5⅞ x 10 1/16 12 1/16
1-7½ x 3- 2 **3-10** **4- 6**	16 x 33 41 49	16 x 10 13/16 13½	16 x 10 1/16 12 1/16	7⅞ x 10 13/16 13½	7⅞ x 10 1/16 12 1/16

Stiles . . . . . 1 21/32" **Bottom Rail** . . . . . 3" **Muntin** . . . . . 3/16"
Top Rail . . . . . 1 29/32" **Vertical Bar** . . . . . 3/16"

Note: Sash are made ⅛" narrower and 1/32" shorter than opening sizes given above.

STORM SASH AND SCREENS 1⅛"

Storm Sash	Screens
St. . . . . 1 29/32"	St. . . . . 1 27/32"
T.R. . . . . 1 29/32"	T.R. . . . . 1 27/32"
B.R. . . . . 4 1/16"	B.R. . . . . 3"
C.R. . . . . 7/8"	C.R. . . . . 5/8"

Storm Sash and Screens are made 1/8" narrower and 1" longer than window opening sizes.

CELLAR SASH 1⅛" AND 1⅜"

St. . . . . 1 21/32" T.R. . . . . 1 29/32" B.R. . . . . 1 29/32" V.B. . . . . 7/16"	 2 Lt.
2-0 x 1-4 **2-4 x 1-4** **1-8** **2-0**	10 x 12 12 x 12 16 20
St. . . . . 1 21/32" T.R. . . . . 1 29/32" B.R. . . . . 1 29/32" V.B. . . . . 3/16"	**3 Lights Wide**
2-4 x 1-4 **2-8 x 1-0** **1-4** **1-8** **3-0 x 1-4** **1-8** **3-4 x 1-8**	8 x 12 9 11/32 x 8 12 16 10 21/32 x 12 16 12 x 16
St. . . . . 1 29/32" T.R. . . . . 1 29/32" B.R. . . . . 1 29/32" V.B. . . . . 3/16"	**4 Lights Wide**
3-8 x 1-4 **1-8** **4-4 x 1-4** **1-8**	9 13/16 x 12 16 11 13/16 x 12 16

Note: Sash are made ⅛" narrower and 1/16" shorter than opening sizes given above.

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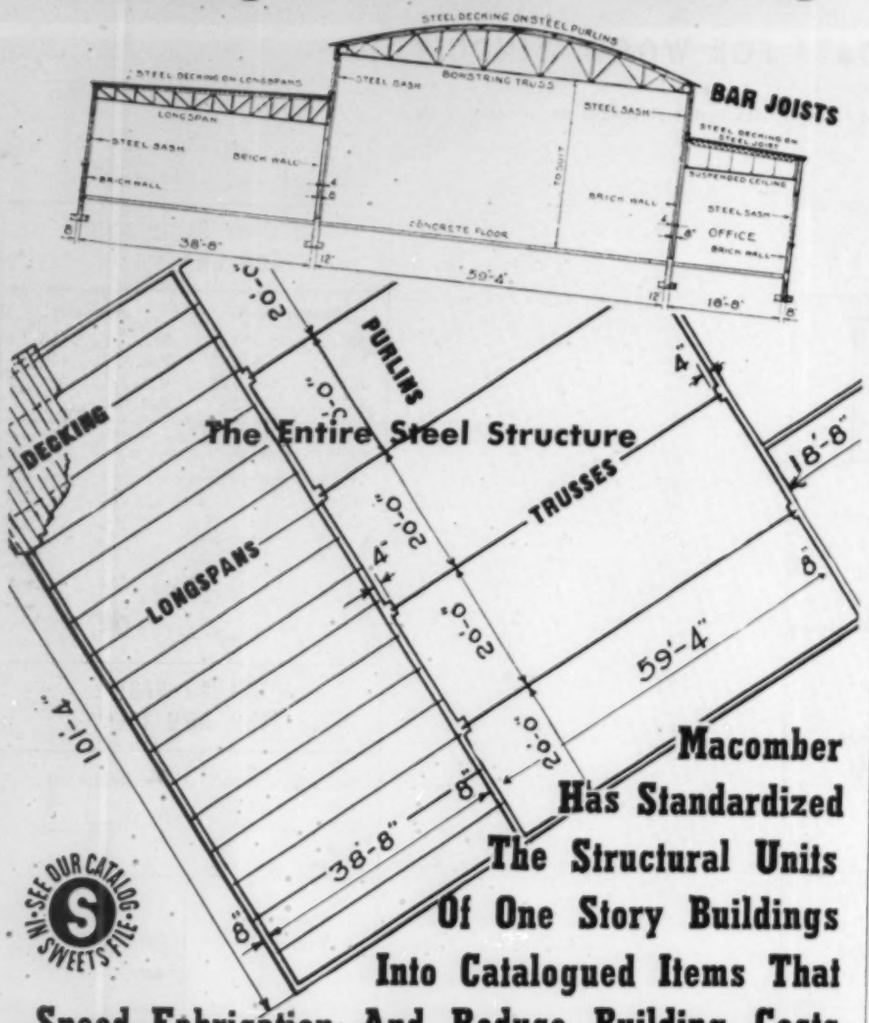

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STANDARDIZED STEEL BUILDING PRODUCTS

NEWS FROM CANADA

(*Continued from page 10*)

Building Outlook Bright

Construction industry leaders see a contract award total in 1949 that will about equal last year's record $954 million. But they agree that physical volume may drop as much as 5 to 10 per cent. Building costs, they say, will probably continue to rise slightly during the first six months of the year, then they will level off.

Contractors and suppliers are slowly returning to the practice of quoting firm prices, at least on jobs requiring a short completion time, but a buyers' market seems to be as far away as ever. It is expected that there will be more cement and lumber in 1949, but bottlenecks will remain in the supply of steel pipe, gypsum lath, plasterers and bricklayers.

No decline is anticipated, either in dollar value or in number of units completed, in residential construction. As a matter of fact, there may be an increase in both categories because of the unusually large carryover — 55,000 units — from 1948. The volume of engineering works, and commercial and institutional building, is expected to remain unchanged. Industrial building, in keeping with last year's trend, may be down a little.

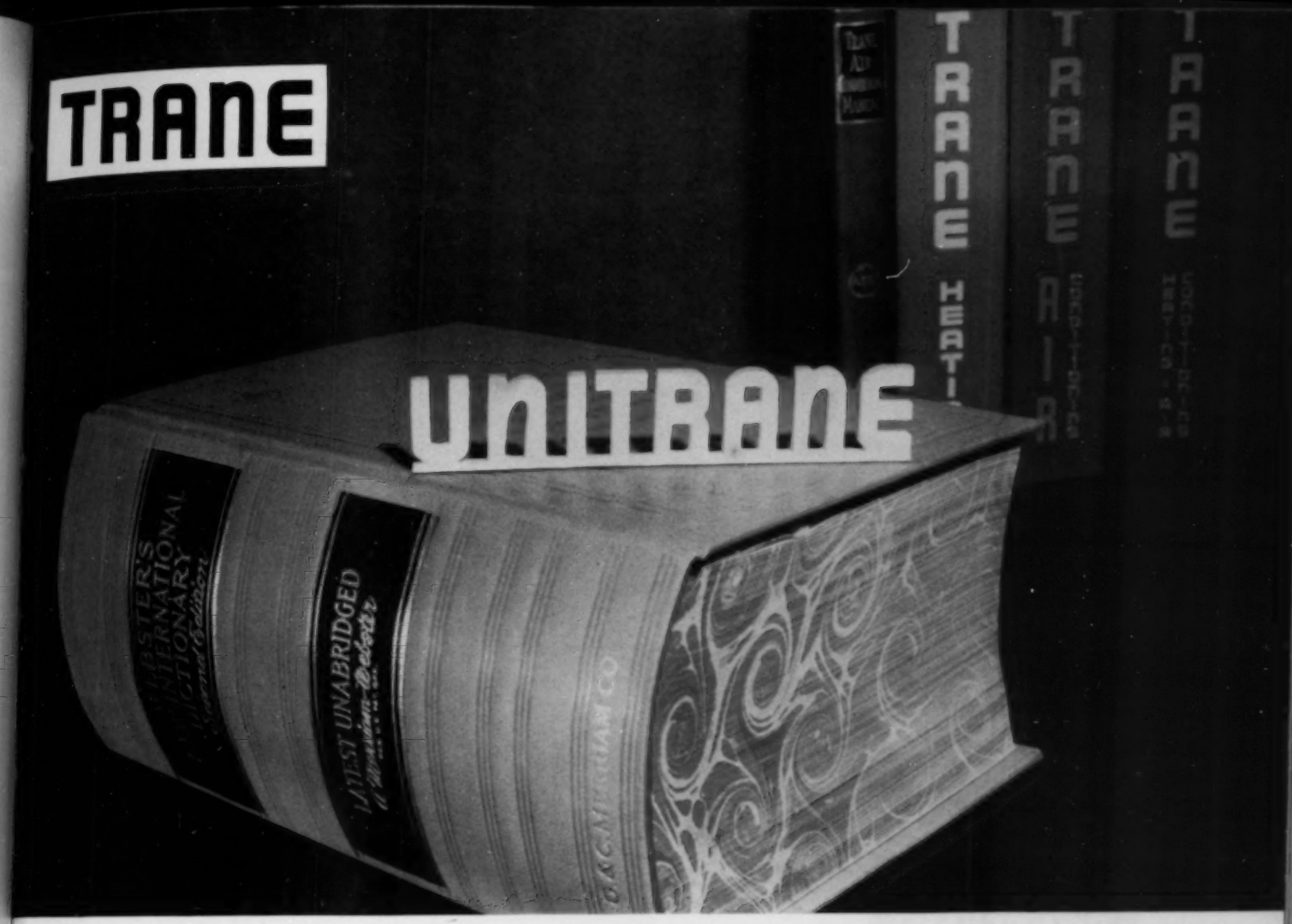
Hamiltonian New President

Charles Lenz of Hamilton was elected president of the Ontario Association of Architects for 1949 at the annual meeting held in Toronto, January 21–22.

Retiring president L. E. Shore urged Association members to dip into their treasury to build "permanent quarters" in Toronto, with a lecture hall to accommodate from 100 to 150 architectural students. He also suggested that practising architects might give more assistance to architects-in-training by providing them with office experience.

Members were loud in their praise of the work done by the Committee of Arrangements, voted the meeting among the most memorable in the history of the Association. The program ranged from an exhibition of new building materials and tour of current construction projects to panel discussions on topics of architectural interest. Highlight of the annual dinner was an address by Louis Skidmore, senior partner of

(*Continued on page 148*)



Air Conditioning — Unabridged

The new name for air conditioning is UniTrane. It's too new for the dictionary—but it does have one important feature in common with the big Merriam-Webster book: both are complete—*unabridged.*

UniTrane is not merely a new system. It is a new kind of air conditioning. And it deserves a new name: It is a *Unit* system. It is a *Trane* system. It is a *UniTrane* system.

UniTrane air conditioning has individual room temperature control, moisture control, ventilation control. Filtered air. All *without* ducts.

It is designed for big buildings with small rooms. Office buildings. Hotels. Hospitals.

Type MC UniTrane units have *two* circuits in one cabinet. One circuit controls ventilation and moisture. The other circuit controls room temperature. The two circuits work together, but they are independently adjustable. There is no other system like it.

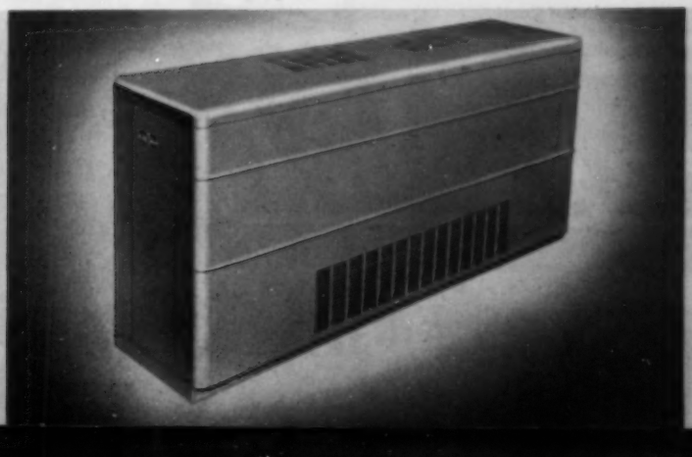
And no ducts! Just simple piping, like a hot water heating system. You circulate hot water in winter, chilled water in the summer. It's as simple as that.

Read "Merely a Matter of Air" for non-technical information about UniTrane. See Bulletin DS-420 for professional data. The Trane sales office in your area is ready to tell you many interesting things about UniTrane—Air Conditioning, unabridged.

THE TRANE COMPANY...LA CROSSE, WISCONSIN

Manufacturing Engineers of Heating, Ventilating and Air Conditioning Equipment—Unit Heaters, Convector-radiators, Heating and Cooling Coils, Fans, Compressors, Air Conditioners, Unit Ventilators; Special Heat Exchange Equipment, Steam and Hot Water Heating Specialties. IN CANADA, TRANE COMPANY OF CANADA, LTD., TORONTO.

This Type MC UniTrane Room Unit is beautifully styled for underwindow installation in offices, hotels, hospitals, and other multi-room buildings. Each room has its own temperature, moisture, and ventilation control . . . Data bulletin DS-420 is for architects and engineers . . . "Merely a Matter of Air" is an interesting non-technical discussion of multi-room air conditioning.



The upper facia is in Seaporcel dark blue horizontal fluting with the lower structure in semi-matte pink color. Awning hood and letters are in semi-matte light green.
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Seaporcel
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NEWS FROM CANADA

(*Continued from page 146*)

Nott and Merrill Photo

New York Architect Louis Skidmore (left) is presented with an inscribed monel metal memento by L. E. Shore, president of the Ontario Association of Architects, on behalf of the Association at its Toronto meeting. Mr. Skidmore received the honor in recognition of his part in planning important international projects such as the United Nations Center and the Atomic Energy Commission's Oak Ridge

Skidmore, Owings and Merrill, who extended fraternal greetings from architects in the U.S.

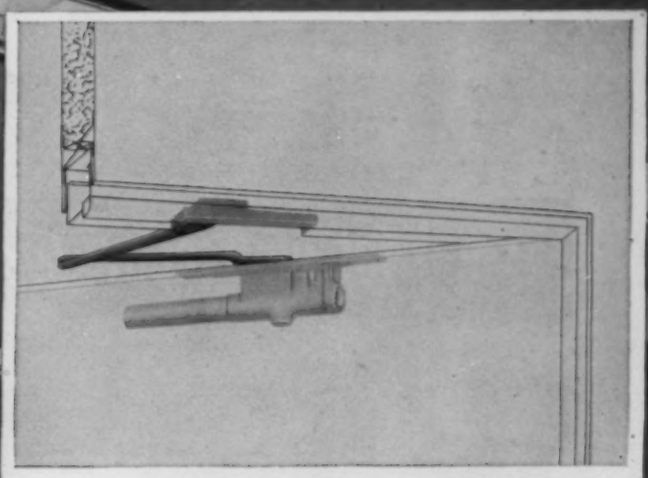
First Home Show Scheduled

Canada's first National Home Show will be staged in the Canadian National Exhibition's Horticultural Building, Toronto, May 20–28. It will feature demonstrations of new methods, materials and equipment calculated to produce better, cheaper building. Co-sponsors are the National House Builders' Association and the Toronto Metropolitan Home Builders' Association.

New P.M. Says Subsidies Out

Pressure for subsidized housing has been mounting. It is favored by the Canadian Federation of Mayors and Municipalities, the Canadian Construction Association, the Royal Architectural Institute of Canada, the Canadian Welfare Council and many other organizations. However, the Dominion Government appears to have a low estimate of the political potency of

(*Continued on page 150*)



● Designed especially for use in metal door and frame construction, the LCN No. 304 Closer is concealed within the door. Requiring only 1⅜" in width, it fits easily into a 1¾" door prepared by the fabricator, and is secured by machine screws. The arm connects with a soffit plate in the head frame, where a three-point mounting allows for adjustment to local conditions.

In This "Lab" Everything Has to be Right

So the Steel Partition Doors Have LCN Concealed Closers

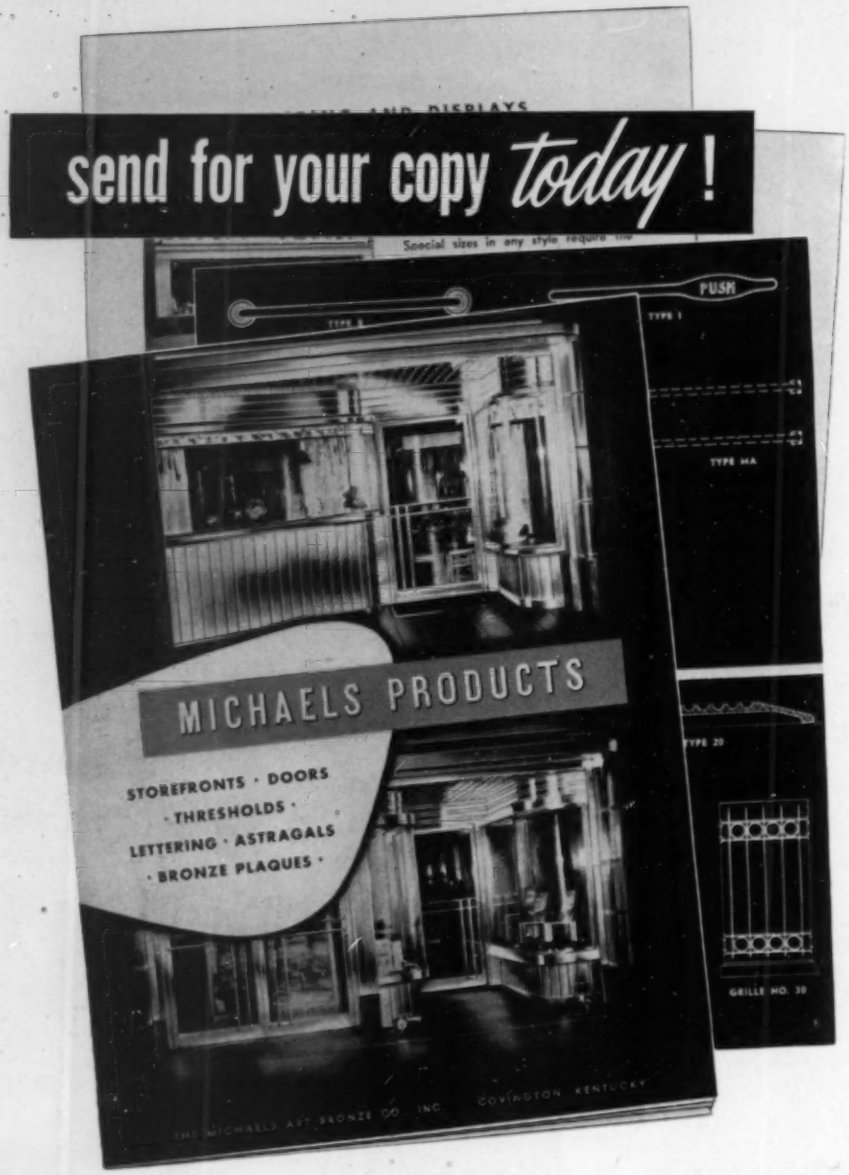
● Modern from top to bottom is the new Whiting Research Laboratory, designed for Standard Oil Company of Indiana by Holabird & Root & Burgee, Architects.

The movable steel walls, fabricated by The E. F. Hauserman Co., have hollow metal doors equipped with LCN No. 304 Closers Concealed-in-door. The powerful mechanism of this closer is entirely hidden in the door itself, and with its unobtrusive lever arm will handle easily any metal interior swing door up to 3′6″ x 7′ x 1¾″ in size, and will operate efficiently under common conditions of internal draft and heavy traffic for which a simple adjustment is provided.

A hold-open feature is available where desired, as an integral part of the closer. Backcheck action (to protect walls and fixtures on the opening swing) is always included.

This is but one of LCN's eleven types of concealed door control based on over twenty years of engineering and manufacture in this special field. LCN Catalog 11-a, almost a manual on the subject, promptly sent on request. LCN Closers, Inc., 466 West Superior Street, Chicago 10, Illinois.

OVERHEAD AND FLOOR CONCEALED LCN **AND EXPOSED TYPE DOOR CLOSERS**



Every architect and builder should have a copy of this brochure. It contains much information on Michaels building products... products that are well known for their unusually high quality. And architects have found that Michaels has the men, the machines, and the know-how to faithfully reproduce in metal their most exacting specifications. A partial list of Michaels stainless steel, aluminum and bronze products is shown below. If your plans call for something special, send us the blueprints. We'll be glad to submit quotations. It will be to your advantage to talk over your requirements with Michaels.

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Representatives Wanted

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NEWS FROM CANADA

(*Continued from page 148*)

these groups. Beyond providing a concealed grant to the veterans' housing program carried on by Central Mortgage and Housing Corporation, it has disregarded the subsidy plea.

Public housers were not hopeful of a change in attitude when Louis St. Laurent sat down in the chair so long warmed by Mr. William Lyon Mackenzie King. (Mr. St. Laurent once declared that no government of which he was a member would ever subsidize housing.) It turns out they were right. At a recent press conference, the new Prime Minister expressed belief that lack of money was not holding back building. Since all possible manpower and material was going into it, government subsidies were not needed to sustain housing construction.

This, of course, is not the housers' argument at all. They don't say subsidies are needed to sustain housing construction. They say they are needed to enable low-income families to occupy a percentage of the housing built. Misinterpretation of their object, though perhaps unintentional, drives them to distraction. One protests, "It seems obvious that the concept of subsidized low-rental housing is not well understood . . . on the part of the new Prime Minister."

Building Costs Level Off

"The most encouraging sign in the construction cost field in 1948 is the leveling off of the marked price increases of 1946 and 1947," Central Mortgage and Housing Corporation reports in the latest issue of *Housing in Canada*, a quarterly review of major trends in the shelter field.

Attributed to a more moderate rise of material prices in 1948 as compared with the very rapid increase of the previous year, the combined index of building material wholesale prices and wage rates in construction trades increased only 7 per cent from January to September of 1948 as compared to a 17 per cent increase in the first nine months of 1947. The 1948 increase is made up of a 6 per cent rise in the composite index of building material wholesale prices and a 9 per cent gain in the index of average hourly wage rates (including holiday pay allowances) paid to building workers.

(*Continued on page 152*)

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SCHOOL LIGHTING

16 pages of facts and photos

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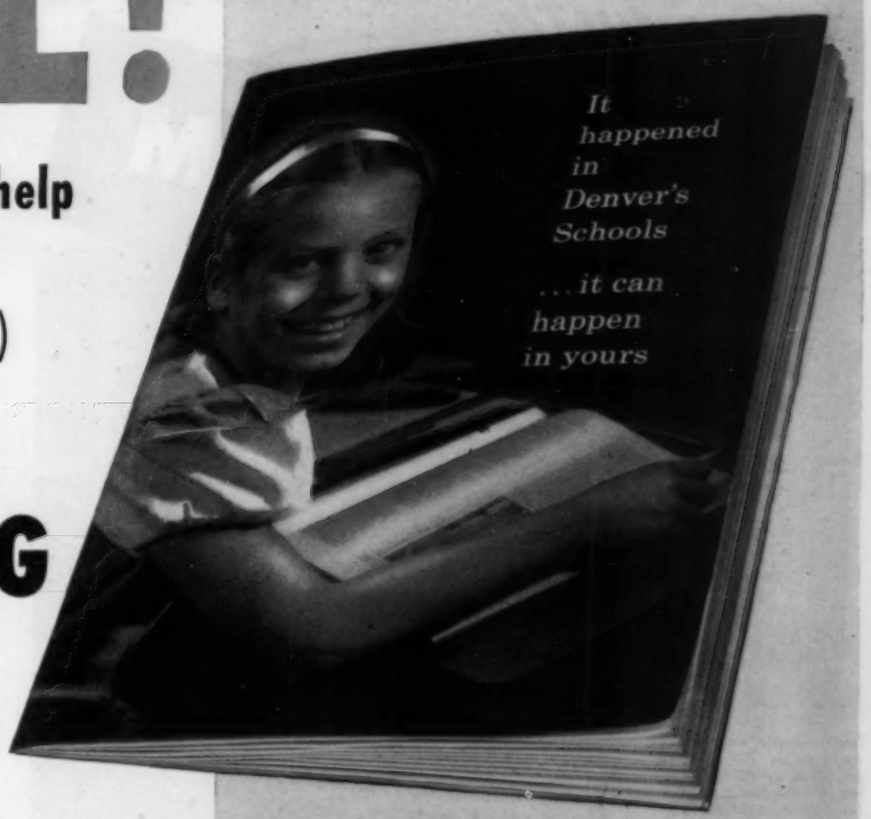

Here's a real selling tool . . . an easy-to-understand booklet that points out the need for better school lighting—then *shows what steps can be taken to get a school lighting program started.*

Put this booklet to work for you. Send it to educators, parents, PTA members—all the many hard-to-reach people who must support a school lighting program. *Not fixture advertising!* This is an understandable, objective case history of a planned school lighting program that will help overcome that "What can we do about it" public indifference. Let it help you SELL school lighting . . . the need for it . . . how to get it.

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Please send me, free and postage prepaid, _____ copies of your new booklet, "It Happened in Denver's Schools." I understand there's no obligation.

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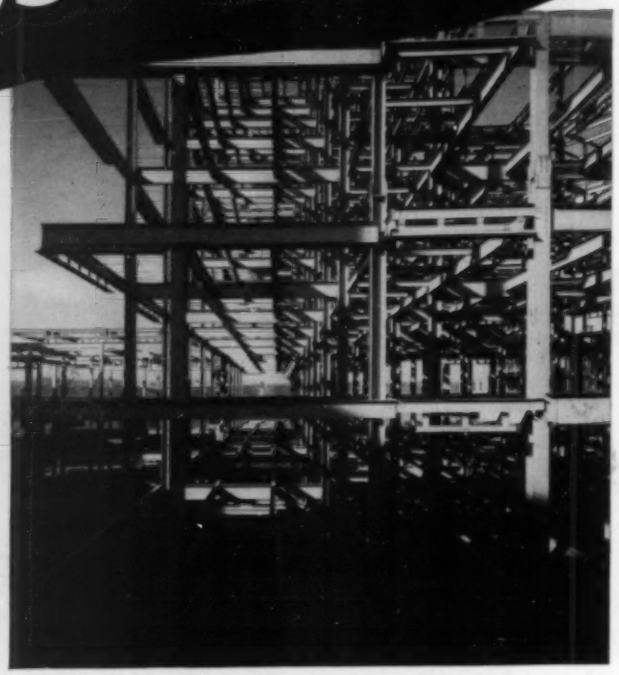

Tough, elastic, enduring—Rust-Oleum defies rust-producing conditions years longer—protects the *structural strength* of steel.

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For structural protection, specify the use of Rust-Oleum on all iron and steel — particularly in inaccessible areas where condensation causes rust. Rust-Oleum positively stops rust and adds years of life to structural members, pipes, sheet metal, etc. which are difficult or impossible to reach in normal maintenance.

Indoors or out — Rust-Oleum seals metal with a tough, pliable, destruction-proof coating. Originally developed to resist the highly corrosive effects of salt water and salt air, under tough sea-faring conditions, Rust-Oleum gives lasting protection where ordinary materials fail. It's *your* best answer to all rust problems.

We will gladly offer specific recommendations on Rust-Oleum application and uses, if you will give us full information as to technical requirements. See the complete Rust-Oleum catalog in Sweet's, or write for a copy.

PERSONAL—Do you have a rust problem? We'll be glad to send a free sample for a test application on your car or at home. Be sure to state color preference.

RUST-OLEUM CORPORATION

2479 Oakton Street Evanston, Illinois

NEWS FROM CANADA

(*Continued from page 150*)

Planners Hear Detroit Expert

That able fledgling, the Institute of Professional Town Planners, held its annual meeting on January 28 in Toronto. Two principal subjects were dealt with: the planning accomplishments of the past five years and the methods to be employed in solving problems that remain.

George F. Emery, Director of the Detroit Planning Commission, was guest speaker at the luncheon session. He told delegates how the one and one third billion dollar Detroit plan would be implemented. The plan provides for a new civic center, riverfront development, improved cultural, educational and recreational facilities, more efficient transportation, slum clearance and public housing. "The citizens can have all this," Mr. Emery declared, "without adding more to their tax bills than they annually spend on movies."

Completion Time Stands Still

The Dominion Bureau of Statistics reports that 68,103 dwelling units were completed in Canada in the first 11 months of 1948. Those finished in November took an average of 6.0 months to build, a figure showing practically no change from October's 6.1 months.

Report on Building Research

A year-end summary of the work of the National Research Council pays tribute to the Division of Building Research. The Division has, it appears, continued its close cooperation with Central Mortgage and Housing Corporation. Joint studies have been made of such problems as paint deterioration and basementless houses, and a long-term study of mortar deterioration is about to be launched. The first of a series of technical reports — a directory of commercial testing laboratories — has been prepared and published.

The construction industry is particularly interested in the work done by the section of the Division dealing with codes and specifications. Worthwhile results are expected from a meeting of municipal officials held in Ottawa, February 28–March 1. The meeting aimed at full discussion of existing building codes with reference to the start of further work on the National Building Code. The Code, which appeared in

(*Continued on page 154*)

THESE CURTIS "READY-MADES" *help you whittle down* BUILDING COSTS

When stock design woodwork achieves custom-built distinction—at lower cost—that's news for today's home planners and home builders! And that's why Curtis Woodwork is used so extensively in giving home-owners "more for their money." For Curtis Woodwork makes excellent design and quality construction available for any size or type of home. Here are a few reasons why:

You can give any room the proper focus without expensive special millwork. This Curtis mantel, for example—Design C-6040—has a pleasing simplicity which gives it dignity and beauty. Designed for Curtis by Cameron Clark, Architect.

You can see the sure touch of a master designer in this charming Curtis entrance—Design C-1730. H. Roy Kelley, Architect. Curtis entrances assure lasting value and beauty.

A fine cabinet for the home owner who wants something out of the ordinary—Curtis Design C-6515. The Architect was Russell F. Whitehead. Curtis offers 18 styles of cabinets.

A NEW Curtis Development—

PRESPINE

Developed after years of research and testing, Curtis Prespine is a new wood material for use in panels in Curtis doors and as an integral part of other Curtis Woodwork. Prespine has a hard, satin-smooth surface that takes paint and other finishes beautifully. Tough and durable, Prespine will not warp, check or splinter. It is 93% wood—and resembles in color the species wood from which it is made. Picture on right shows the beauty of Curtis doors with Prespine panels.

When in New York, visit the Curtis Woodwork Display at Architects' Samples Corporation, 101 Park Avenue.

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AR-3W Curtis Building, Clinton, Iowa
Gentlemen:
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Only Wing Revolving Heaters Circulate the Heated Air Around Obstructions

AS the air from roof or ceiling areas is passed through the heating element of a Wing Revolving Unit Heater and projected downward through discharge outlets that slowly revolve, the heated air is not delivered to the working area in single-direction blasts, but in moving air-streams that sweep slowly through 360 degrees, covering successively every direction. The heated air moves around and under obstructions reaching to walls and remote corners. Every part of the plant is thus kept at an invigorating comfortable temperature.

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Revolving UNIT HEATERS

NEWS FROM CANADA

(*Continued from page 152*)

1941, has not had the recognition and application originally hoped for.

$670 Million since 1927

In an introduction to the 1949 edition of the *Book of Homes*, a MacLean-Hunter publication, D. B. Mansur, president of Central Mortgage and Housing Corporation, states that the outlay of federal funds and guarantees for housing has reached a figure in the neighborhood of $670 million. Since the Canadian Farm Loans Act was passed in 1927, the Dominion Government has contributed financial assistance or taken a direct part in the construction of more than 150,000 dwelling units. The greatest volume of government assistance was funneled through the Dominion Housing Act and the two National Housing Acts which superseded this legislation.

The figure of $670 million may seem to be a staggering amount. Actually, it is little more than the anticipated budgetary surplus rolled up by Canadian taxpayers for the Dominion Government in 1948.

Growing Pains in Edmonton

Edmonton, Alberta, faces one of the most serious housing crises in its history. The population has mushroomed, largely because of the sensational oil discoveries in the province.

The house production target for 1949 is 3000 units, 1000 more than was aimed at previously. It is proposed that 400 of these be built according to a plan for small, basementless houses developed by the Edmonton House Builders' Association. Available in three sizes — one, two and three bedrooms — and seven different exterior designs, these dwellings would meet local and national minimum building standards and require a down payment of only $700 or $800. The plan has been submitted to Central Mortgage and Housing Corporation for approval under the National Housing Act. Ways of restricting sales to Edmontonians with monthly incomes of less than $200 are being reviewed.

Rental Ceiling Gets Boost

Central Mortgage and Housing Corporation announces that the ceiling on rentals for completely serviced dwelling units covered by rental insurance

(*Continued on page 156*)

Close-up of the Empire Savings facade shows effective use of bronze against background of black Italian marble. Heavy outer doors are made of cast panels framed in Anaconda Extruded Bronze. Grille above is fabricated from red brass sheet, rod and tubes. The street windows, presenting dioramas of the Old West, are also framed in Anaconda Bronze.

•

Private office partitions at Empire Savings are formed of glass panels supported by Architectural Bronze frames.

PHOTOS BY SOUNDSTILLS, DENVER.

THE OLD WEST GOES MODERN ... IN TIMELESS

Bronze

SCENES OF THE WEST in its wild and wooly days provide the motif for the ultra modern decor of Denver's new Empire Savings Building.

Architect for the new home of the Empire Savings Building and Loan Association is Roger J. Musick, of Denver. Architectural bronze work was fabricated by the William G. Zimmerman Ornamental Iron Works, also of Denver.

Except for the bronze castings and other materials for color contrast, Mr. Zimmerman employed Anaconda Alloys exclusively—extruded architectural bronze shapes, red brass rod, sheet and tube.

In adding this work to his long list of artistic achievements, Mr. Zimmerman reaffirms his confidence in the uniformity of Anaconda Architectural Bronze in color, texture and physical properties.

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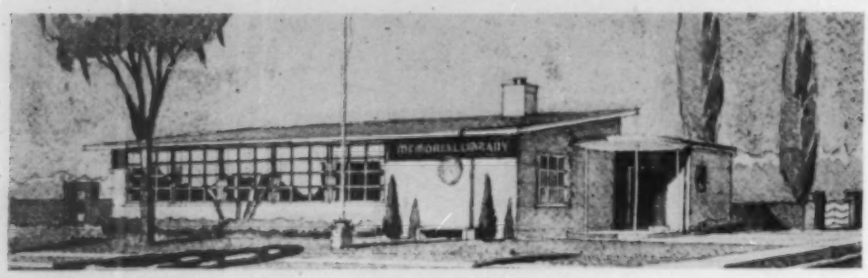
NEWS FROM CANADA (*Continued from page 154*)



Long Branch, Ont., war memorial a public library. Murray Brown & Elton, Architects

KENILWORTH HOTEL
MIAMI BEACH, FLORIDA
Roy F. France & Son
Architects

Designed for exterior beauty as well as for indoor comfort, Gate City Awning Windows lend interest to the architectural design of this well known hotel. From the strictly formal pattern made by the closed sash to the distinctive lacy effect of the open tiers, the result is always pleasing. Even when the sash are opened their widest, the window space does not resemble a "hole in the wall".

"TAILORED" COMFORT
for Apartment Houses and Hotels

Gate City Awning Windows permit both the apartment dweller and the hotel guest to "tailor" the ventilation to their needs. These windows have twice the ventilating area of ordinary windows. A few easy turns of a handle open them to the exact degree desired.

When open, the sash draw in the fresh outdoor air . . . keep it gently moving at the ceiling . . . cool off stuffy rooms on hot days . . . prevent rain from damaging floors and decoration. Made of wood, these windows are rigid . . . sturdy. They cannot squeak, slam, flutter or rattle—important features which add still further to the comfort of the guest.

Nation-wide installations prove that Gate City Awning Windows meet the requirements of Northern climates as well as those of the South. Vertical weatherstripping is standard; horizontal weatherstripping on order. For further information, see Sweet's, or write to Gate City Sash & Door Co., Dept. R-3, Fort Lauderdale, Fla.

AWNING WINDOWS BY
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has been raised from $80 to $84 per month. This maximum rental has been established for living units comprising 800 sq. ft. and provided with heat, hot and cold water, stove, refrigerator and janitor.

The insurance program, introduced last year, guarantees builders of approved rental housing projects sufficient income to look after taxes, debt service, operating expenses, repairs, renewals and replacements. Rental insurance may be purchased for 10, 20 or 30 year periods, with annual premiums of 1¾, 2 and 2¼ per cent of the insured rentals.

Loans on insured rental housing projects are made directly by recognized mortgage institutions, and are authorized up to 85 per cent of present costs, as estimated by Central Mortgage. The mortgage repayment period is 20 years, with principal repayments at 2½ per cent per annum. The maximum interest rate is 4¼ per cent per annum, calculated semi-annually.

Rental insurance, to quote D. B. Mansur, president of the Corporation, "virtually assures that . . . an investor will never lose his property to a mortgagee, no matter what happens to rental levels." The worst that could happen would be that the owner's equity would bear interest at 2 per cent, with amortization of the mortgage continuing at 2½ per cent.

Despite its advantages, the response of investors and builders to the rental insurance program has been luke-warm. The $4 boost in the rental ceiling may induce more enthusiasm on their part.

Construction Association Meets

Allan C. Ross of Ottawa and Robert Drummond of Toronto were re-elected president and vice president respectively of the Canadian Construction Association at its annual convention in Toronto, January 23–26. T. N. Carter of Toronto was elected honorary secretary and P. G. Wilmut of Montreal honorary treasurer.

The C. C. A. is Canada's leading building organization and its convention deliberations always are of general interest. This year's program proved no exception. Highlights of some of the addresses follow:

1. *End of Cost Rise in Sight.* "While it would be improper to forecast any substantial drop in costs in 1949, there is reason to hope that, if we continue to make progress in restraining inflationary factors, the cost rise may be halted by the end of the year." — Allan

(*Continued on page 158*)

New AMERICAN STATE BANK, LUBBOCK, TEXAS, FEATURES

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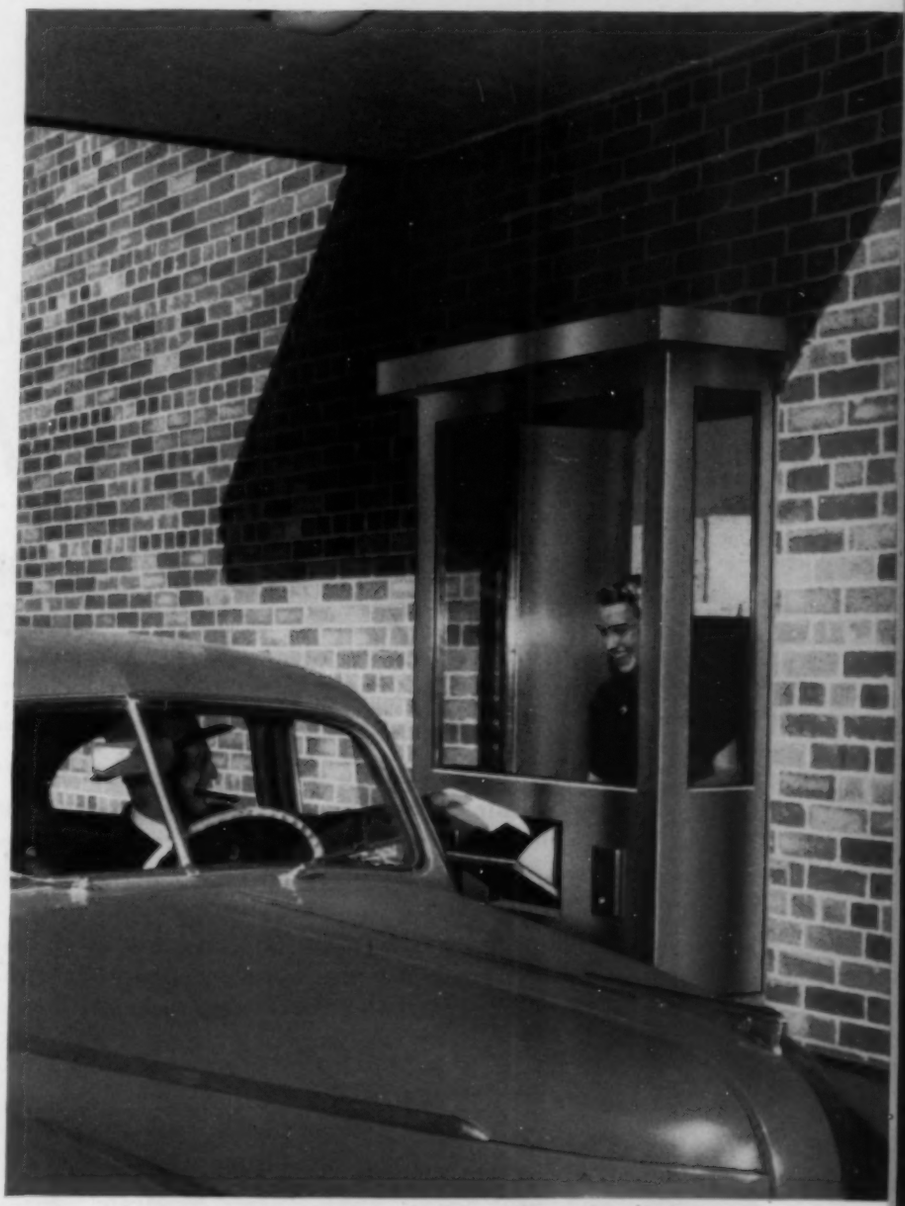

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NEWS FROM CANADA (Continued from page 156)

C. Ross, President, Canadian Construction Association.

Figures presented to support this prediction showed that the pace at which costs had increased was slowed from 20 per cent in 1947 to approximately 10 per cent in 1948.

2. *Industry to Go Underground.* "I think that it is in this sphere of activity (the decentralization of war plants) that the construction industry will be called upon to play a major part." — H. J. Carmichael, Chairman, Canadian Industrial Defence Board.

The Board is working on plans to put the Dominion's vital factories underground to protect them against atomic attack. Two sites have already been selected and surveyed for certain plants which are "of such strategic importance that their destruction would be disastrous."

3. *Shelter Lack Still Apparent.* Effective demand as calculated by the number of completed but unsold houses in the major communities of Canada shows little indication that the country faces . . . a lessening of the need for additional housing. — D. B. Mansur, President, Central Mortgage and Housing Corporation.

Net family formation, including immigration, has kept up with the volume of house building. We have just managed to look after current needs without making much progress on the backlog of demand which accumulated during the war years.

4. *Public Works Shelf Exists.* "In the years beyond 1949 . . . public investment may have to play a more important part than it did in the last four years." — Hon. R. H. Winters, Minister of Reconstruction and Supply.

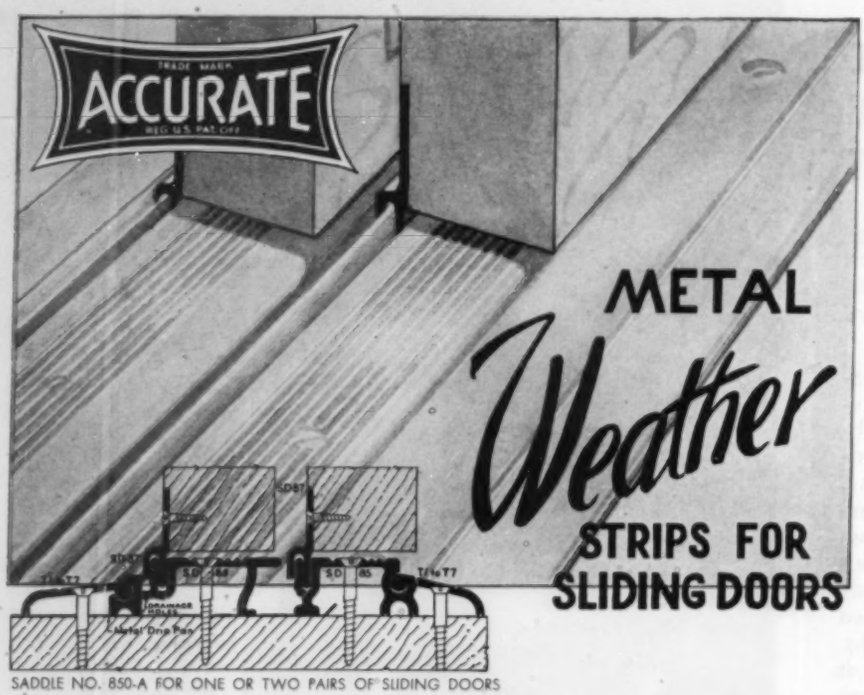
A public works shelf consisting of fully-planned projects exceeding $100 million in value has been built up "but much remains to be done. We would like to have a shelf of at least three hundred millions of worthwhile federal projects. If provinces and municipalities would build up a proportionate shelf, this would mean a total of potential public projects of about one billion dollars."

5. *Canada Needs More Apprentices.* "We have to find ways and means of drawing into the ranks of our workers five times as many boys as we have now. And, after we get them, we have to find ways of training them to be good mechanics more quickly and efficiently than is presently the fashion." — J. M. Pigott, Chairman, C.C.A. Apprenticeship Committee.

An early meeting between employers, representatives of organized labor and appropriate departments of government was advocated to face the problem created by apathy to apprenticeship training. Need for an entirely new approach was indicated.

6. *More Steel Unlikely in '49.* Our production of steel ingot in 1949 should increase at least 100,000 net tons over 1948's 3,075,000 total, providing scrap steel continues to flow and there are no major mill breakdowns or strikes. — F. K. Ashbaugh, Dominion Steel Controller.

Canada can hope to import about 800,000 tons of U.S. steel in 1949, about 119,000 less than last year. The deficit will be offset partially by increased imports from Europe. Total steel supply should be about equal to that of last year.



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Welded Steel Framework Cuts Cost 50%

By Francis J. Schroedel, President
Schroedel Construction Company, Milwaukee, Wisconsin

DIRECT savings of 50% over masonry and fire resistive construction are being realized in the erection of four 12-family apartment units, eight 16-family units and one 24-family apartment for the Estabrook project in Shorewood, Wisconsin. These savings result from greatly simplified construction methods using steel members for wall frame and floor joists and are made possible by arc welding.

A modular design using 2-foot increments enables mass production arc welding techniques for fast, low-cost shop fabrication of wall panel members for the first and second floors. Bethlehem open-web expanded-steel studs are welded between a channel cap or girt and a sill plate for both the first and second floor panels. Three-quarter inch channel is added between the studs for horizontal bracing.

During field erection, the wall panels are raised into position, held in place with a simple clamp (Fig. 1) and arc welded with 5/32" diameter "Fleetweld 5" electrode, using 200-amp. engine-driven Lincoln "Shield-Arc" welders. The first floor framing is welded into an integral unit, and a finished concrete floor is later poured to cover the sill plates thus anchoring the building frame in position.

An "I" beam, supported by two outside walls and the center utility room walls, forms the center support for the expanded steel second floor framework. The erection of the second floor panels is then done without the need for any scaffolding.

Exterior walls are finished with masonry, and interior plastering is applied to metal lath. In addition to direct cost savings in the building erection, additional benefits are easier, less costly installation of plumbing, wiring and insulation. The structure is both shrinkproof and verminproof.

Fig. 1. Arc welding steel panels to form the side walls. Panels are made from 4" Bethlehem expanded steel studs.

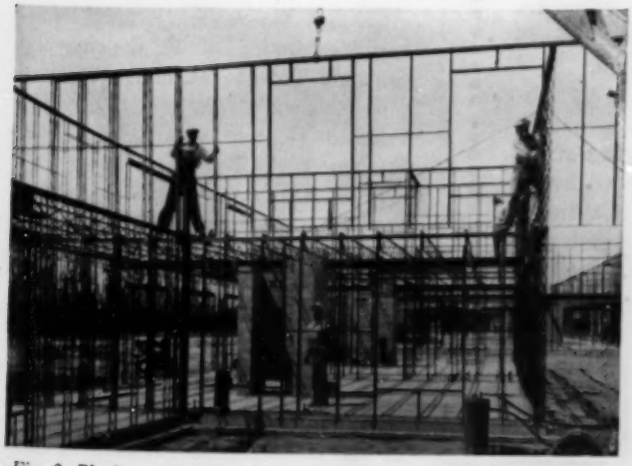

Fig. 2. Placing second floor prefabricated steel wall panels in position. Panels are hoisted and welded in place without use of any scaffolding.

Fig. 3. Framework for one of many multiple family apartments built with all-welded steel construction. The Estabrook Homes project is located in Shorewood, Milwaukee, Wisconsin.

The above is published by **THE LINCOLN ELECTRIC COMPANY** *in the interests of progress.*
Architects and engineers are invited to write on their letterheads to be placed on mailing list for Structural Welding Studies.
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 (*Continued from page 22*)

funds can be generated to implement school construction on a heavy scale. This increase is expected to become evident as soon as costs actually start to drop.

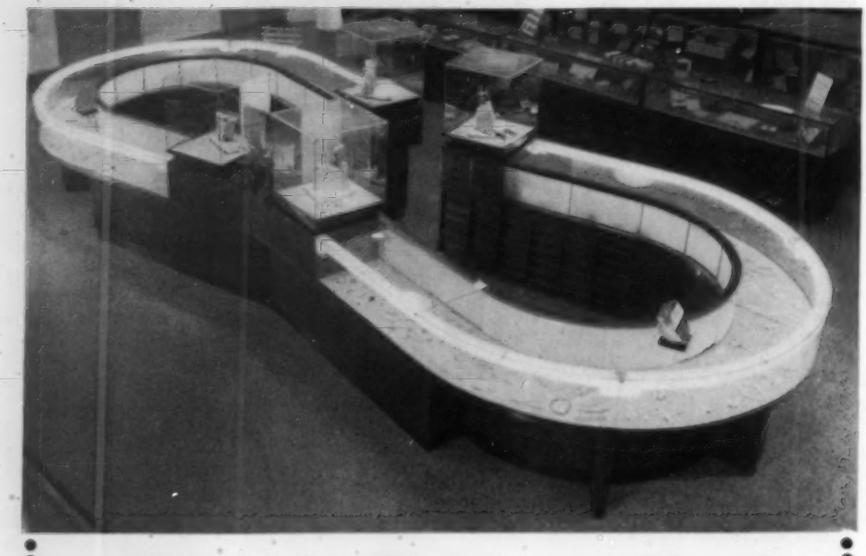
The FWA Office said this about the progress of school construction over the past 30 years: "If the rate of public school building in the decade of the 1920's had been continued from 1932 through 1947, we would have today an additional $5.5 billion (in terms of 1947 costs) worth of public school plant. The average annual rate of public school construction in recent years, 1940 through 1947, was little more than a fourth of the average annual accomplishment of the 1920's."

Summarized in terms of physical space, the present requirements call for construction of some 200,000 additional new elementary and secondary classrooms. This takes into account an anticipated enrollment increase of 6.2 million children seven years from now. This can be worked out with fair accuracy on the basis of known birth rate totals.

Public and private sources are concerned over the problems presented in the education picture. They see competing needs for other types of public works (sewer and water facilities, roads, hospitals and other community building types) taking a highly competitive position in the overall building programs. Intensive home construction activity, commercial and industrial building eat up large amounts of building materials, manpower and contracting and engineering potential.

Value of public school construction put in place in 1948 is measured at $550 million. In terms of physical volume, however, this proves out to be well below the yearly average of the 1920's and not much more than half the volume of public school plant added in 1939.

Many perfectly adequate school structures were found to be "geographically obsolete" due to extensive migration of workers and their families to new production areas during the war. Still another factor in this has been the reshifting of population accompanying reconversion to a peacetime economy. The shifting pupil loads are creating need for new schools far faster than it can be satisfied.



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ON THE CALENDAR

Through March 19: "Piranesi Drawings," exhibition of 79 drawings by Giovanni Battista Piranesi, 18th century Italian architect and etcher. The Pierpont Morgan Library, 29 E. 36th St., New York City.

Through March 20: "American Paintings from the Museum Collection." exhibition at the Museum of Modern Art, New York City.

March 4–April 2: Whole-House Architectural Exhibition, The Art Alliance, 251 S. 18th St., Philadelphia, Pa.

March 4–indefinite: "Ancient Art of the Near and Middle East," exhibition at the Metropolitan Museum of Art, New York City.

March 6–31: Survey of 200 Years of Print-Making, exhibition by Kennedy and Company, The Akron Art Institute, Akron, Ohio.

March 14–17: Chicago Technical So-

(*Continued on page 162*)

For modern housing...

MASS—1768 new apartments in the Jacob Riis Houses in New York City . . . that's mass housing. It is estimated that the Gold Bond Solid Partition System, used throughout, provided over 100 *extra* apartments.

CLASS—One of New York's finest penthouse apartments at 90th Street and Central Park West, where Emery Roth & Sons specified and used the Gold Bond Solid Partition System. Met every exacting requirement. Added 7% rentable space.

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QUALITY—The number one requirement for Tudor Plaza, Buffalo's newest deluxe cooperative apartment building, was "the very best of materials and construction." Gold Bond Solid Partition System met *every* requirement!

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cieties Conference and 7th Chicago Production Show, Stevens Hotel, Chicago.

March 15–18: 81st Annual Convention of the American Institute of Architects, Rice Hotel, Houston, Texas.

March 29–April 1: 3rd National Lighting Exposition, Chicago.

April 11–15: 6th Western Metal Congress and Exposition, Shrine Auditorium, Los Angeles.

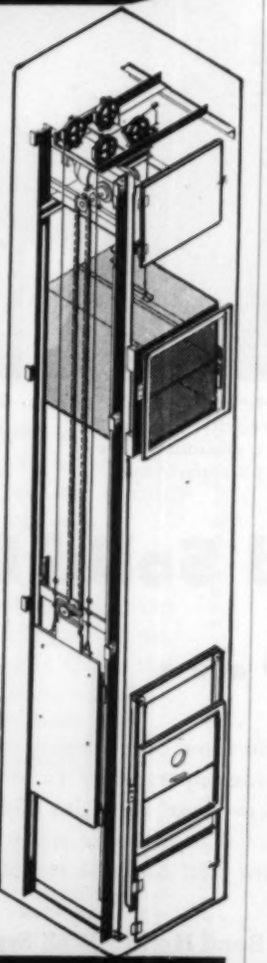
April 19–21: South West District Meeting, American Institute of Electrical Engineers, Baker Hotel, Dallas, Texas.

April 20–23: Spring Meeting, American Society of Civil Engineers, Oklahoma City, Okla.

May 1–27: Inaugural Exhibitions in the new building, and 26th Annual May Show of works by local artists, The Akron Art Institute, Akron, Ohio.

THE *Sedgwick* ROTO-WAITER

...a new kind of fully automatic electric dumb waiter that *never* overtravels



FOR TWO-STOP INSTALLATIONS...the new Sedgwick Roto-Waiter, with its unique endless chain drive principle of operation, embodies those features of safety, dependability and economy that make it the ideal dumb waiter for stores, hospitals, hotels, restaurants, libraries, clubs, schools, banks, factories, residences and other commercial, institutional and industrial buildings.

The single direction motor helps cut costs by eliminating the need for special control equipment normally required when reversing motors are used—and, by reducing starting torque, it cuts current consumption.

Furthermore, Sedgwick Roto-Waiters . . .

1. Never overtravel
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3. Require only minimum clearances
4. Have an overload safety device for safe operation
5. Require no heavy load-bearing supports, except at bottom
6. Are easy to install

The table of dimensions, shown below, lists three standard *counterweighted* Roto-Waiters. A Sedgwick *uncounterweighted* Roto-Waiter (with car size 24" x 24" x 36", 150 lbs. capacity) is also available when the dumb waiter is to be installed in limited space, as for undercounter use.

STANDARD ROTO-WAITER DIMENSIONS			
Size No.	2C	3C	5C
Capacity, lbs.	200	300	500
Car width, in.	24"	30"	36"
Car depth, in.	24"	30"	36"
Hoistway width, in.	33"	39"	45"
Hoistway depth, clear in.	27"	33"	39"
Hoistway depth, including doors, in.	29"	35"	41"

In addition to the Sedgwick Roto-Waiter, Sedgwick also builds Multi-Stop Electric Traction Dumb Waiters, designed for installations where there are three or more landings to be served. Both are of all-steel construction. Specify, too, Sedgwick Steel Dumb Waiter Doors for complete satisfaction.

Whatever your vertical transportation problem may be, it is probable that we have case histories on parallel applications in our files. We'll be glad to supply you with such information, prices or any other data you may require.

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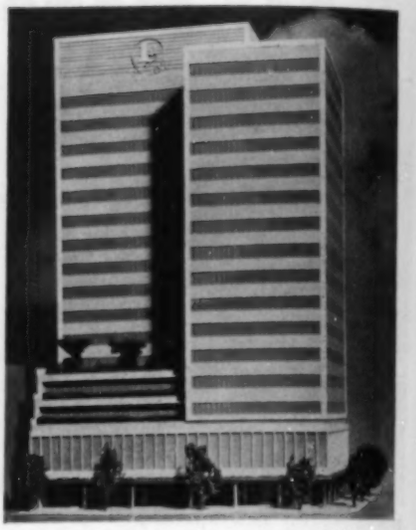


Model of office building for busy corner in Tulsa. Carson & Lundin, Architects

OFFICE BUILDING

Now under construction in Tulsa, Okla., is a 20-story office building which will house the First National Bank & Trust Company of Tulsa and the main offices of the Sun Ray Oil Corp. To cost approximately $5,500,000, the building was designed by Carson & Lundin, New York architects. It will have exterior walls of gray brick, with lighter colored marble. Windows will be continuous, arranged in 5-ft. units to facilitate installation of office partitions with a wide degree of latitude. An unusual feature will be an open arcade on the ground floor. The First National's main banking floor will be located on the second floor of the building, and will be reached from the street level by moving stairways. Other bank services will be housed in the first sub-basement and on the third, fourth and fifth floors.

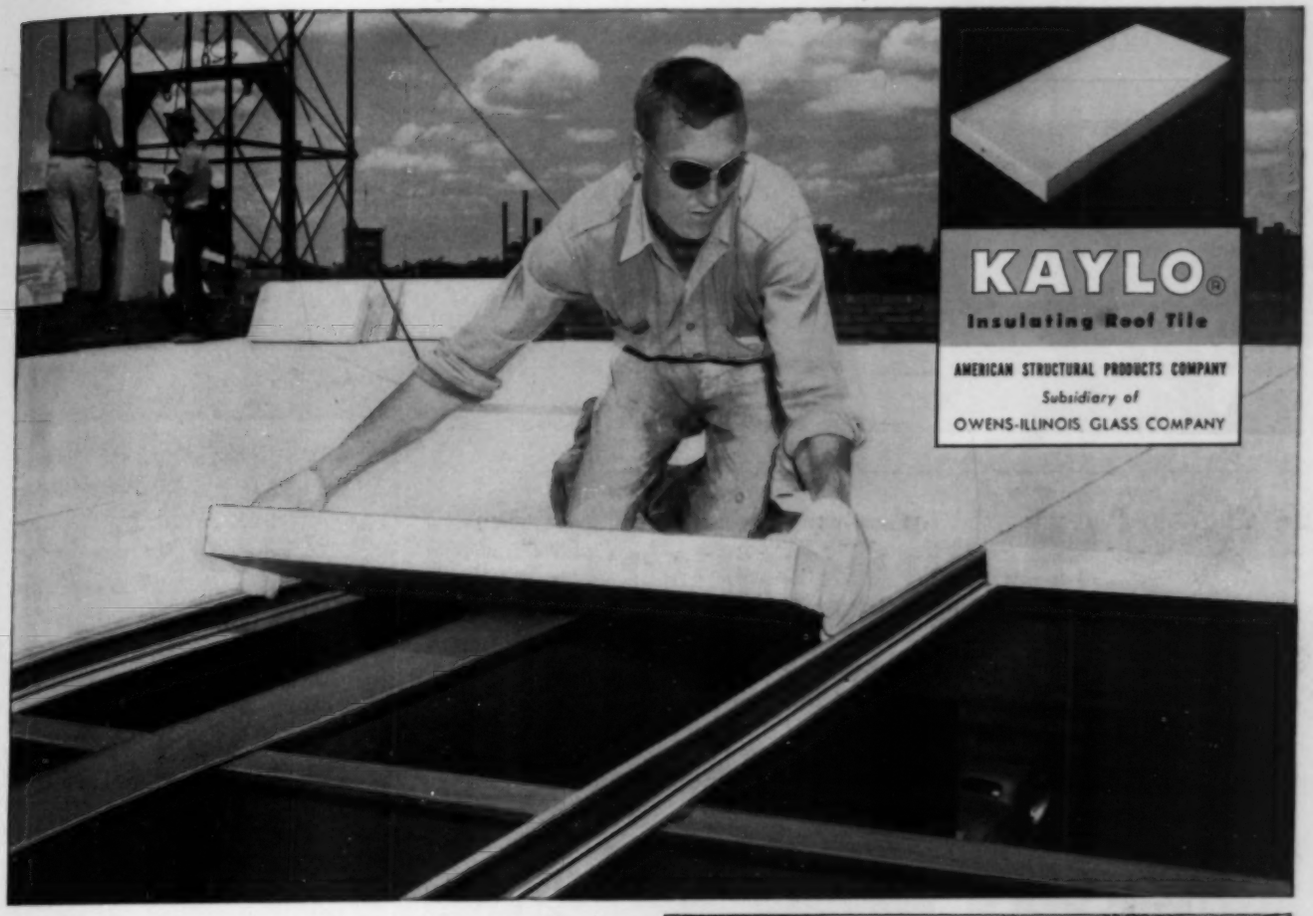
COMPETITION WINNERS NAMED

Low-Cost Furniture

Nearly 3000 entries from 31 countries were submitted in the Competition for Low-Cost Furniture sponsored by the Museum of Modern Art, New York City, and the Museum Design Project, Inc., results of which were announced in mid-January.

The $5000 first prize for seating units was divided between Don R. Knorr of Chicago and Professor Georg Leowald of Berlin, Germany. Mr. Knorr, an architect, is a graduate of the University of Chicago and is currently working in both architecture and furniture in the office of Eero Saarinen at Bloomfield Hills, Mich. Prof. Leowald is a designer

(*Continued on page 164*)



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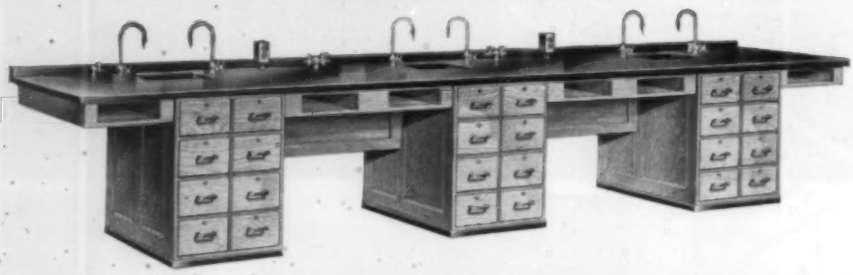
 (*Continued from page 162*)

Left, winners and officials of the Low-Cost Furniture Competition: seated, Robert E. Lewis, Davis J. Pratt, Don R. Knorr, Ralph W. Fox, Clive Latimer; standing, James L. Prestini, John O. Merrill, Rene d'Harnoncourt (farthest back), Harry Fish, John B. McMorran, Nelson A. Rockefeller, Dean L. M. K. Boelter, Alexey Brodovitch, Ira A. Hirschmann, Robin Day, Edgar Kaufmann, Jr., Charles Eames, Prof. Georg Leowald. Above, the Competition Jury: front row, Rene d'Harnoncourt, Catherine Bauer, Luis de Florez, Mies van der Rohe; second row, Hugh Lawson, Alfred Auerbach, Gordon Russell; standing, Edgar Kaufmann, Jr., Director

"Head of the class"

in science labs



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hitherto unknown in this country.

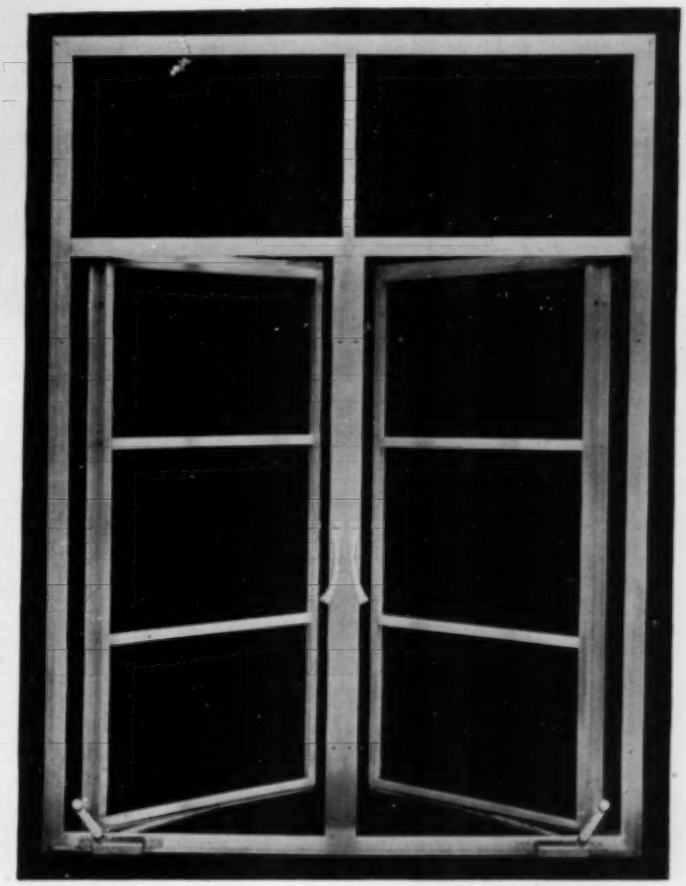
The $2500 second prize for seating units was divided between Charles Eames and the University of California, Los Angeles Campus, group with which he was working, and Davis J. Pratt of Chicago. The third prize of $1250 for seating units went to Alexey Brodovitch, art director of *Harper's Bazaar* since 1934.

Only the $5000 first prize for storage units was awarded, the recipients being Robin Day and Clive Latimer, well-known British designers. The $2500 prize for the best research report was awarded to James L. Prestini and the Armour Research Foundation of the Illinois Institute of Technology, where Mr. Prestini is now working.

The Simmons Prize, offered for a sleeping unit convertible for daytime use, was not awarded as no designs submitted were considered superior to those already in use.

Honorable Mentions, carrying no reward, were given for a seating unit design to John O. Merrill and John B. McMorran of Massachusetts Institute of Technology, and for a storage unit design to Ernest Race, an English designer.

(*Continued on page 166*)



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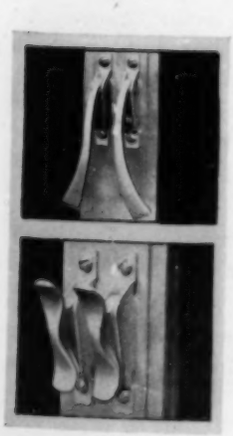
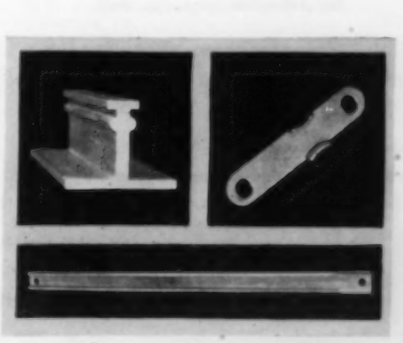


CHOICE OF BUTTERFLY OR CAM LOCKING HANDLES

The optional choice of butterfly type for use with venetian blinds or the standard cam locking handles gives you a freedom of choice.



The Ware Mullion with self-aligning fit, bulb weathering and 3/16 inch web is exclusive with Ware.

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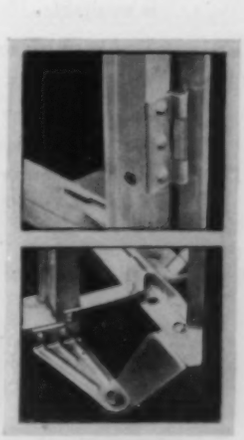


Tile Flooring

Winners in the $10,000 Kentile-*Architectural Forum* design competition have been announced as follows:

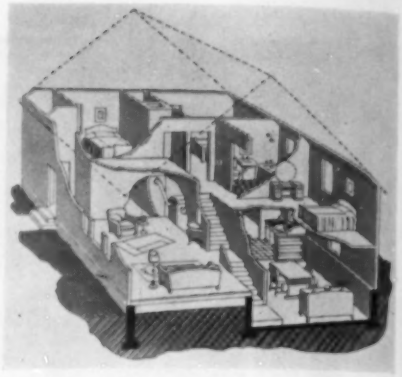
First prize of $1500, to New York Architect George Cooper Rudolph for his design of a modern candy shop;

First prize of $1500 to G. Russello and B. Johnson of Detroit for their design of a suburban home's kitchen and breakfast area;

First prize of $1500 to A. Albert Cooling of Los Angeles, for his design of a living room;

Second prizes of $750 each to George Cooper Rudolph of New York (kitchen), Robert Pattison of Elyria, Ohio (living and dining room), and Mrs. Barbara Upshaw Siegel of Chicago (candy shop);

Third prizes of $500 each to Harlan E. McClure of Minneapolis (kitchen), Mary Royer of Los Angeles (living and dining room), and Thomas Weatherwax of Philadelphia (candy shop).



Tri-Level Home is for mass production

HOME BUILDERS SHOW
TRI-LEVEL HOME

A special scale model of the Tri-Level Home — a three-bedroom house ready for factory mass production by Lumber Fabricators, Inc., of Detroit — was displayed at the Annual Convention and Exposition of the National Association of Home Builders in Chicago last month.

Designed especially to meet the needs of low-income bracket families, the Tri-Level Home meets FHA National Minimum Construction Standards. Within the interior dimensions of 26 by 30 ft., it includes three bedrooms and bath on the upper level, living room on grade level, and dining room, kitchen and recreation-utility room on the lower level. It minimizes excavating to a maximum of 3½ ft., providing large recreation and utility space without basement cost.

APPRENTICESHIP EXHIBITS

A traveling exhibition of stained glass panels executed by apprentices in the stained-glass industry has been shown recently in Philadelphia, Cincinnati and Milwaukee, and is opening on March 29th at the Delaware Art Center in Wilmington. It will be shown in New York City, at the Cooper Union, from May 23 to June 8 and later will be taken to St. Louis and Boston. The tour was arranged by the Stained Glass Association of America.

AT THE COLLEGES
Fellowships Announced

The annual competition for the Traveling Fellowship in Architecture offered by Rice Institute will be held in the Department of Architecture begin-

(*Continued on page 168*)

A roof is no better than its shingle . . . and unless it's a *good* shingle, the effort and skill you put into your building is wasted.

Bird Masterbilt Thick Butt Shingles stand the test of time . . . a Bird roof is a better roof. *Extra* layers of asphalt and deeply embedded mineral granules give tough lasting protection *where it counts* . . . on exposed tabs. The rugged surface defies weather . . . and fire resistance is greatly increased for the long life of the shingle. Narrower cut-outs and heavier shadow-lines give added massive beauty . . . and a wide range of handsome lasting colors and blendes is available.

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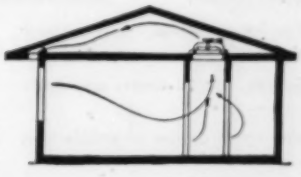
with the new Hunter Package Attic Fan

Provide this 38" x 40" ceiling opening

Install the Hunter Package Fan in the Attic ***(Fan, shutter and switch in one compact unit)***

RESULT: cool comfort throughout entire house



A Complete Unit: No expensive, space-consuming suction-box is required for installation . . . just a simple ceiling opening for the Package Fan, plus attic exhaust vent. Shutter and switch are built-in. No ceiling grille or other accessories needed.

Performance Guaranteed: Certified air delivery rating: 9500 CFM, with shutter operating. Fan guaranteed for five years, motor for 1 year. Basic design features have been proved in thousands of homes. Highest quality construction assures quiet, trouble-free operation. See our Section in Sweet's. Or write for Architect's Data File.

HUNTER FAN & VENTILATING CO., INC.

396 S. Front St., Memphis, Tenn. • Exclusive Fan Makers Since 1886

Hunter Package Attic Fan

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THE RECORD REPORTS (*Continued from page 166*)

ning April 12 and ending May 16. The Fellowship provides a sum of $1200 to be used for foreign travel and study, with a minimum of five months' residence in the foreign country chosen. It is open only to graduates of the Rice Institute Department of Architecture. For further information address The Department of Architecture, The Rice Institute, Houston 1, Texas.

The University of Illinois has announced the 18th annual consideration of candidates for the Kate Neal Kinley Memorial Fellowship. The Fellowship offers $1000 toward defraying the expenses of advanced study of Fine Arts in America or abroad. It is open to graduates of the College of Fine and Applied Arts of the University of Illinois and to graduates of similar institutions of equal educational standing whose principal studies have been in Music, Art, or Architecture. Applicants should not exceed 24 years of age on June 1, 1949. Requests for application blanks and instructions should be addressed to Dean Rexford Newcomb, College of Fine and Applied Arts, Room 110, Architecture Building, University of Illinois, Urbana, Ill. Applications should reach the Committee by May 1st.

Florida School Reorganized

The University of Florida has announced that its School of Architecture and Allied Arts has been redesignated as the College of Architecture and Allied Arts. The College is composed of the Department of Architecture, the Department of Art, and the Bureau of Architectural and Community Research.

William T. Arnett, a member of the faculty since 1929 and director of the School since 1946, has been named dean of the College and director of the Bureau of Architectural and Community Research. John L. R. Grand, a member of the faculty since 1937, has been named head of the Department of Architecture.

Appointments

Henry S. Churchill, town planner and architect of the firm of Churchill-Fulmer Associates, has been named an Associate in Planning at Columbia University. Mr. Churchill, who has been a special lecturer and advisor on town planning at the University, will act as a critic during the spring session.

Robert B. O'Connor, of the New York architectural firm of O'Connor and Kilham, has been appointed supervising architect of Princeton University.

Athelstan F. Spilhaus has been named Dean of the Institute of Technology of the University of Minnesota.

Carnegie Tech's Building Program

Carnegie Institute of Technology has announced the reopening of a $4 million campus building and renovation program, which will include a million-dollar wing for Engineering Hall, a power plant and a steam and electricity distribution system expected to cost over $1 million, and extensive revamping and renovation of available space in existing buildings of the colleges of Engineering and Science, Fine Arts and Margaret Morrison Carnegie College. The program originally was decided upon in March, 1947, but was not put into effect because of the high building costs. The plans have been revised somewhat to permit available funds to cover as much as possible of the original program.

(*Continued on page 170*)

Why

AMERICA'S LEADING ARCHITECTS CHOOSE

Amtico RUBBER FLOORING

DURABILITY • Amtico floors thirty years old are still in service with no appreciable signs of wear.

QUALITY • Backed by over thirty years experience in making rubber to walk on.

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New ...a Moulding Kit in Pittco Premier Store Front Metal

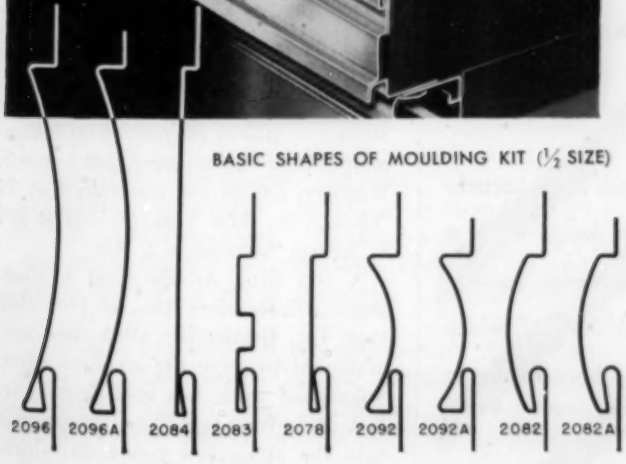
● The new basic mouldings in the Premier line of Pittco Store Front Metal may be truly called a Moulding Kit. They may be combined in a wide variety of attractive patterns, giving the architect fresh style and beauty, and great variety in design to help in the creation of distinctive, sales-winning store fronts.

Shown here with the same head and drip members are three of the many designs which may be formed with these new shapes. Cross sections of some of the new mouldings are shown at left.

Most of the shapes in the Premier Moulding Kit are interchangeable and may be used both horizontally and vertically. They make it easy to design several adjacent store fronts, giving each a distinctively different appearance through the proper selection and arrangement of mouldings.

This convenient Moulding Kit of Pittco Premier Store Front Metal, is another result of "Pittsburgh's" constant research, aimed at helping you solve architectural and building problems encountered in the field.

BASIC SHAPES OF MOULDING KIT (½ SIZE)



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THE RECORD REPORTS (*Continued from page 168*)

New Engineering Building

Construction of a million-dollar engineering building has been begun at Wayne University in Detroit, as the first step in the developing of engineering facilities for 1382 students now enrolled in its Engineering College. Engineering students heretofore have been using facilities developed under emergency conditions in old and temporary structures.

The first unit to be built under the program will be three stories high, and will contain the essential power and supply equipment for the additional structures to be built later. The building will be of reinforced concrete construction, the exterior faced with brick. Interior partitions will be cinder block, and the flooring will be colored Masterplate finish over concrete. Architects are Pilafian and Montana of Detroit.

The fourth of a series in the interest of more efficient use of steel . . . a vital American resource.

INHERENT STRENGTH

the strength of rail steel plus the bond of Laclede Multi-Rib Design

The actual inherent strength of rail steel is fully harnessed for work in the Laclede Multi-Rib bar design. Rail steel rolled into bars with Multi-Rib design offers a yield strength in excess of 55,000 PSI—with greatly increased anchorage. Laclede Multi-Rib Reinforcing Bars meet the new ASTM Specification A 305-47T, which provides a long-needed yardstick for anchorage in reinforcing bars, assures a more efficient use of steel.

Modernize your specifications with ASTM A 305-47T!
Modernize your steel reinforcing with Laclede Multi-Rib Bars!

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Producers of Construction Steel

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St. Louis, Mo.

OFFICE NOTES

Offices Opened, Reopened

The H. K. Ferguson Co., Industrial Engineers and Builders, has established a new Western district office in Los Angeles. The office, at 712 Curson St., will be managed by Henry Maag, a member of the Ferguson organization for the past 22 years.

Myron F. Nelle, Structural Engineer, has opened his own office at 707 Cottage Grove Ave., South Bend 16, Ind. His past experience has been with residential, commercial, industrial and public utilities structures.

John T. Simpson, A.I.A., Architect and Engineer, has opened an office at 12 Broad St., Red Bank, N. J. Formerly of Newark, Mr. Simpson has been doing special work for the War Department for the past six years.

Max J. Wolfson, Architect, has opened his own office at 3845 Alta Vista Terrace, Chicago 13, Ill.

New Addresses

The following new addresses have been announced:

John Hancock Callender, Architect, 280 Madison Ave., New York 16, N. Y.

Paul Kang, Consulting Engineer, 260 Kearny St., San Francisco, Calif.

George E. McIntyre, Architect and Engineer, 528 Dwight Bldg., Kansas City, Mo.

Thomas L. Shepherd, Architect, 7466 Girard Ave., La Jolla, Calif.

New Firms, Firm Changes

Othmar H. Ammann and Charles S. Whitney have announced the reorganization of the firm of Ammann & Whitney, Consulting Engineers, with the following staff members as Associate Partners: Milton Brumer, Werner Ammann, Boyd G. Anderson, and James S. Whitney. Offices are maintained at 76 Ninth Ave., New York 11, and at 724 E. Mason, Milwaukee 2, Wis.

A new firm, Architectural & Engineering Enterprises, Inc., of 1806 Hillcrest Dr., Bartlesville, Okla., has been organized to serve the architect whose volume of work has been limited by lack of drafting help. The new firm will take the architect's preliminary drawings and produce from them complete working drawings and specifications, bound and ready for the contractor. All mechanical and structural engineering is furnished.

Ford, Bacon & Davis, Inc., Engineers, of New York, Philadelphia, Chicago and

(*Continued on page 172*)

Some Houses Leak Like a Sieve . . .

INSULATING ROCKLATH*

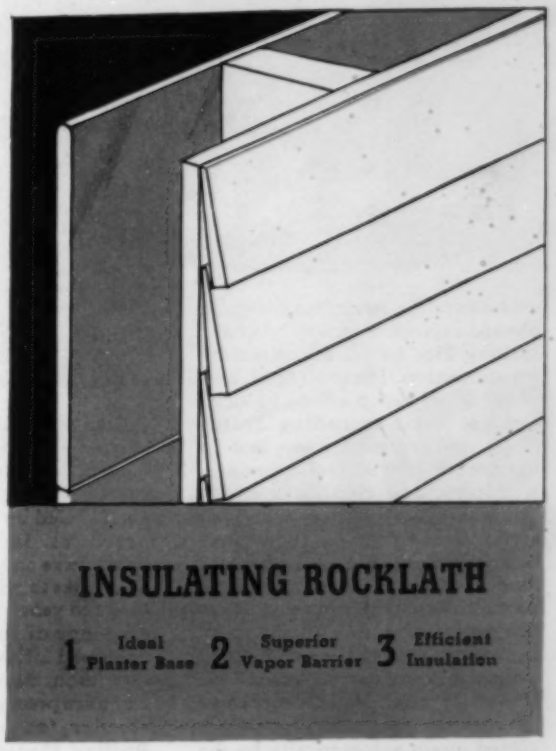
Is the Vapor Barrier That Controls Condensation

Some houses leak like a sieve—from the inside out. For example, consider a house of normal construction but without a vapor barrier. During periods of low winter temperature, up to 2½ gallons of water vapor a day may condense in each 1,000 square feet of unprotected exterior wall.

Insulating ROCKLATH prevents up to 95% of this moisture condensation. In winter, a sheet of aluminum foil laminated to ROCKLATH plaster base at the mill prevents the entrance into the walls of dangerous quantities of water vapor. In summer, this aluminum foil reflects the sun's radiant heat . . . helps keep the house cool and comfortable.

Insulating ROCKLATH, the ideal plaster base, performs three services for little more than the cost of one—and at no extra application cost! Its bright aluminum foil is a very efficient heat reflector and vapor barrier for use in residential construction.

In most states FHA requires certain minimum insulating and vapor barrier values. Insulating ROCKLATH and plaster in residential wall construction will usually provide the FHA values, as well as an ideal plaster base.



*T. M. Reg. U. S. Pat. Off. It distinguishes the United States Gypsum Company's plaster base.

United States Gypsum

For Building • For Industry

Gypsum • Lime • Steel • Insulation • Roofing • Paint

 (Continued from page 170)

Los Angeles, have announced the election of E. S. Coldwell as president, succeeding James F. Towers, who will actively continue as chairman of the Board of Directors.

The Kuljian Corp., Engineers and Constructors, of Philadelphia, has announced the appointment of Edwin Lundgren as their Washington, D. C. representative, with offices at 1415 K St., N. W.

Abraham Levy and Edwin H. Silverman have announced the establishment of individual offices for the practice of architecture in their present quarters at 1411 Walnut St., Philadelphia 2, Pa. The firm of Silverman & Levy was dissolved on December 31.

E. B. Van Keuren, Chas. F. Davis, Jr., Paul M. Speake and J. Marion Thrasher have announced the formation of a partnership for the general practice of architecture and related engineering under the firm name of Van Keuren, Davis and Company, Architects & Engineers. Address: American Life Bldg., Birmingham, Ala.

The name of the firm of Merrill & Wigen, Architects, has been changed to Frederick E. Wigen, Architect. Address: 132 S. Washington Ave., Saginaw, Mich.

New $5,000,000 Saxony Hotel, Miami Beach, features broad balcony terraces. Roy F. France & Sons, Architects

ELECTIONS, APPOINTMENTS

Edmund N. Bacon has been appointed executive director of the Philadelphia City Planning Commission. A graduate of Cornell University College of Architecture, Mr. Bacon has worked with architects Oskar Stonorov and W. Pope Barney of Philadelphia, and in 1938 was awarded a graduate fellowship to study under Eliel Saarinen at Cranbrook Academy.

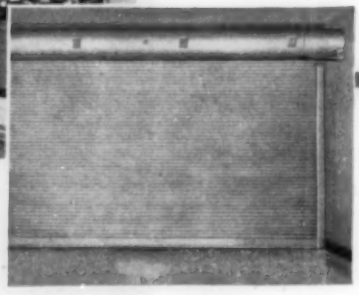
John M. Ducey, formerly economic adviser and director of planning for the Chicago Housing Authority, has been appointed executive director of the National Association of Housing Officials.

Richard J. Seltzer, Philadelphia realtor, has been reelected president of the Urban Land Institute. Reelected to serve with him were: Foster Winter, Detroit, vice president; Herbert U. Nelson, Chicago, secretary; and L. D. McKendry, Chicago, treasurer.

Franklin Thomas, Professor of Civil Engineering and Dean of Students at California Institute of Technology, has been elected president of the American Society of Civil Engineers.

KINNEAR "AKBAR"
ROLLING FIRE DOORS
automatically block spread of flames

These dependable, positive-action doors combine modern styling and fire protection at this entrance to Penney's in the smart, new Terrace Plaza Hotel Building in Cincinnati.



Outstanding structures here and abroad rely on Kinnear "Akbar" Rolling Fire Doors for *automatic* fire protection. These all-steel, fireproof doors set up a "road block" against flame-spreading drafts. They *coil overhead* when not in use, but *promptly* seal off doorways, windows, and corridors at the threatening approach of fire. Positive closure is certain because Kinnear Rolling Fire Doors are *pushed* downward automatically by a strong auxiliary spring. They are *controlled* in downward speed by a special safety device, to avoid personal injury and to lessen floor impact. If raised after closure as an emergency exit, the doors are closed again automatically by the counterbalance spring.

Lack of fire-door protection has proved an important contributing factor to losses in major fires. Akbar Fire Doors are approved and labeled by Underwriters' Laboratories. In many cases these doors save enough in lower insurance rates to repay their cost in two or three years. Built to fit building openings of any size, they can be equipped for daily service use, with or without motor operation. When extra fire protection is not required, regular (non-labeled) Kinnear Rolling Doors are preferred for service use. Write for details.

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TRUCKS THAT HAVE ADEQUATE PLATFORMS . . . ROOM TO MOVE AROUND IN . . . SAVE YOUR DOLLARS AND TIME!

Today, with mounting costs all along the line, *loading platform congestion* is a serious problem. No matter how much money you pour into new tools and methods—inadequate shipping facilities will always eat into your profits.

Right now, make a study of your "bottleneck" areas. Minor remodeling can often take care of normal plant expansion for years to come.

CONSULT YOUR TRAFFIC MANAGER, ARCHITECT AND ENGINEER

THE AMERICAN TRUCKING INDUSTRY

AMERICAN TRUCKING ASSOCIATIONS, WASHINGTON 6, D. C.

(*Continued from page 132*)

quately against the fungi of bluestain and decay only where a little extra assistance suffices to discourage the organisms. As a rule these are places where the wood is dry most of the time but occasionally becomes damp enough for the fungi to grow. A well established example is the window sash in houses, which normally stay too dry for attack but in cold weather when moisture condenses on the glass, may give trouble unless they are treated. On the other hand, superficially applied preservative does not furnish adequate treatment for wood that remains damp much or all of the time, such as wood in contact with the soil.

Water-Repellent Preservatives

Water-repellent preservatives, which contain the ingredients needed for both water repellency and preservation in the same mineral spirits solution, make it possible to impart moderate resistance to moisture changes and to fungi in a single treatment of wood. They are products of dual purpose. The water repellency is not impaired by incorporation of the preservative and the resistance to bluestain and decay is not sacrificed, in fact it may be enhanced, by the combination with water repellents.

Wood Sealers

Wood sealers are forms of varnish or lacquer made to sink into wood surfaces but not to penetrate much beyond the pores close to the surface. They are themselves decorative finishes of a kind that cannot chip or wear off as surface coatings do. They may also serve to seal or prime the wood in preparation for surface coatings of wax, varnish, lacquer, or enamel. A single application of wood sealer gives wood much less protection against change in moisture content than can be obtained with a water repellent, but two applications of wood sealer may prove equal to or, with the best sealers, somewhat superior to a water repellent in protection.

Preservative wood sealers contain fungicides. The water-repellent preservatives, because they penetrate farther into wood, are considered superior to preservative wood sealers for keeping wood free from bluestain and decay. Sealers, however, are now used fairly frequently for woodwork exposed to the weather when a natural finish is desired. In such uses the preservative is often needed to resist mildew, which is a growth of fungi on the surface of the finish. A good plan is to apply a water-repellent preservative first, to preserve the wood, and then to apply the preservative wood sealer to give the desired appearance.

The water-repellent preservatives and related products enjoy a wide field of usefulness in which they can improve the service or prolong the life of wood that has usually had to struggle along without treatment of any kind. Sapwood and other kinds of wood that absorb moisture quickly and rot easily can be particularly benefited. Structures in which there are joints through which rainwater gains access to unprotected parts of the wood can be improved at their most vulnerable points. On the other hand the limitations of these products by reason of the superficial way in which they are applied should be kept constantly in mind; they should not be used where more thoroughgoing treatments are needed.

3 GYMS IN ONE

From Coast to Coast the HORN FOLDING BLEACHERS AND HORN FOLDING PARTITIONS are making one Gym do the job of three. With emphasis on careful planning Horn offers a "tested" solution to gym problems.

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HORN, with years of experience and skill, offers to every school planner the services of the Horn Engineering Department. Horn installations are guaranteed.

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Write for the HORN BOOK. *Modern* SCHOOL PLANNING
A complete book with photographs, plans and specifications.

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FORT DODGE, IOWA — ESTABLISHED 1909

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WOOD... Stimulant to Sales

Where discriminating people shop, the atmosphere of quality that beautiful woodwork imparts is a potent stimulant to sales. That is why wood, beautifully formed and finished, is a basic element of any interior designed for selling. It is well to remember that two generations of outstanding architects and store designers have looked to the craftsmen of Woodwork Corporation for faithful reproduction of their ideas. Creative men have always appreciated the Woodwork policy of adhering precisely to details. Discriminating people have approved the results, not only in retail establishments, but in a long list of hotels, clubs, dining rooms, office suites and churches noted for their beautiful wood interiors. Whether your plans involve a complete interior, or a single display case Woodwork craftsmen and executives are prepared to meet your needs. Your inquiry will receive immediate attention and a prompt reply.

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WOODWORK CORPORATION OF AMERICA

1426 WEST TWENTY-FIRST STREET • CHICAGO 8, ILLINOIS

(*Continued from page 135*)

is decreased when more "cover" is added. Naturally the uniformity could be made almost perfect if the pipe were placed with negligible clearance between the coils, but the cost would be prohibitive. Optimum comfort, when considering uniformity, can be taken as the best that can be afforded. Generally the maximum pipe spacings are taken as 12 in. for a concrete slab and 9 in. for plaster construction.

PANEL CONSTRUCTION

The three points of panel construction are (1) controllability, (2) uniformity and (3) availability. Controllability means that a panel must be able to respond to changing heating requirements with sufficient speed to permit the control devices to maintain the desired air and panel temperatures. The effect of conductivity of the material over pipe coils and depth of the coils has already been discussed. But it might be well to point out that there is no space for variation of pipe coil depth for wall or ceiling panels as normally fastened to metal lath and covered with plaster. For floor slabs there is the possibility of a compromise between a deep coil with good uniformity and poor control with a shallow coil having poor uniformity and good control. The latter is favored, however (see Fig. 4) because good control is more important than uniformity.

Availability of panel area means that the portion of heated surface that has been considered effective by the designer should not be made ineffective by changing furniture, rugs, tapestries, or other objects that will reduce or in other words "hide" the radiating surface. For example, if a designer requires 1000 sq. ft. of wall panel area in an office and it is necessary to place filing cabinets against all but 500 sq. ft. of the wall area, then the availability of panel is insufficient.

REVERSE SIDE HEAT LOSSES

Floor Panels

During the fall when the heating system is just starting to operate, the ground beneath the slab is at its minimum temperature — about 60 F. Then losses from the back of panel to the ground are at a maximum; however, total heat load on the system is very low because of the higher outside air temperatures. The boiler, therefore, has sufficient reserve to carry the back losses during the peak periods. During coldest weather, when the boiler is operating at full capacity, the ground has been warmed and back losses are at a minimum. It is for this condition that back losses should be computed in determining the size of the boiler. Floor panel construction to minimize back losses is illustrated in Fig. 4. (See also *Time-Saver Standards*, ARCHITECTURAL RECORD, Jan., 1948.)

Wall and Ceiling Panels

When wall or ceiling panels are used adjacent to warm rooms there is, of course, no back loss. When the reverse side of the panel is exposed to unheated spaces (outdoors, attics, etc.), insulation to prevent back losses must be determined from an economic standpoint. Back losses add slightly to the boiler size and fuel bill, but insulation adds to the initial cost. The proper amount of insulation, therefore, depends upon initial costs, fuel costs, and interest rates.

(*Continued on page 178*)

Today's modern methods of caring for babies are typified by this sanitary, well regulated hospital nursery.

Back in 1847 when Van was established, these old-fashioned incubators were kept warm by adding hot water to warming tanks.

Bettman Archive

Progress in Van's Century

● 1847-1948 not only marked a century of almost fabulous progress in medical science. The same years showed similar advancement in the science of kitchen engineering and the art of kitchen equipment fabrication . . . the century in which Van has pioneered for the industry.

● Hospital administrators and their architects regularly ask Van for suggestions when planning new projects, revisions or expansions.

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For Low Cost Homes...

Why not USE PART OF THE ATTIC FOR THE "FURNACE ROOM" WITH A GAS-FIRED

Janitrol

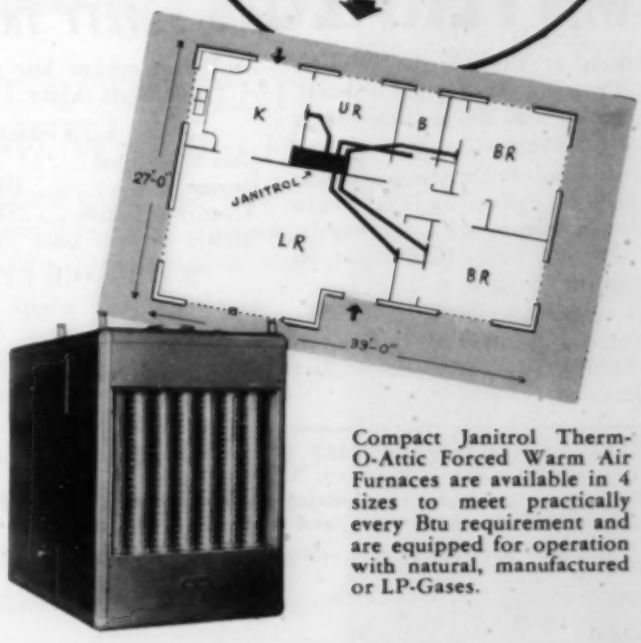
THERM-O-ATTIC FORCED AIR FURNACE

IT'S PRACTICAL! SAVES INSTALLATION COSTS! PROVIDES MORE USABLE LIVING SPACE

Put the heating in the attic? Yes, it's entirely practical with a Janitrol Therm-O-Attic—the installation works like a charm—we have testimonials to prove it. Now, think of the advantages for low-cost homes, where you want to merchandise all that's modern, but you've got to trim costs without seriously sacrificing quality.

1. **No basement** is needed for the heating plant.
2. **You don't use** up scarce closet space.
3. **Short simple** duct systems cut down installation costs.
4. **Grills at** floor levels lead into return air ducts.
5. **Heat is comparable** to a more expensive installation of a winter air conditioner.
6. **A merchandising plus**—the Janitrol Unit can be operated in summer for attic ventilation to exhaust hot air from rooms.
7. **Janitrol Therm-O-Attic** furnaces are complete, factory-assembled and tested packages to further simplify installation.

So, here's the way to put more sales appeal into your smaller homes—provide all the advantages of clean, automatic and economical gas heat with the famous Janitrol name, and at the same time cut your costs. Write today for complete specifications and operating data.



Compact Janitrol Therm-O-Attic Forced Warm Air Furnaces are available in 4 sizes to meet practically every Btu requirement and are equipped for operation with natural, manufactured or LP-Gases.

SURFACE COMBUSTION CORPORATION • TOLEDO 1, OHIO

Janitrol Winter Air Conditioners, Gravity Furnaces, Conversion Burners, Unit Heaters, Boilers and Triple Service Systems

(*Continued from page 176*)

PREVENTING DAMAGE TO PANELS

Where floor or wall panels are contemplated, adequate protection should be provided to prevent damage to pipe coils or warm air ducts.

Floor Panels: a substantial cover of concrete will prevent damage that might be incurred due to excessive concentrated loads such as narrow wheel trucks or sharp objects. Such damage could also occur during the moving of heavy furniture or in garages and warehouses. Another hazard to floor coils exists if there is any probability of renovation such as cutting in new drains for a garage floor. Although not an injury to floor panels, the placing of large crates, stock piles or low furniture will "hide" the panel and prevent effective radiation.

Wall Panels: where heavy vehicles are likely to be used near wall panels, the panels should be protected with a bumper placed on the floor similar to those used to protect a fence. It is seldom wise to use an inside wall for panels in commercial buildings since they are often altered. In residences, wall panels of thin tubing are apt to be punctured when tapestries or pictures are hung. If the panels are not injured, they are at least made less effective as radiant areas.

VENTING

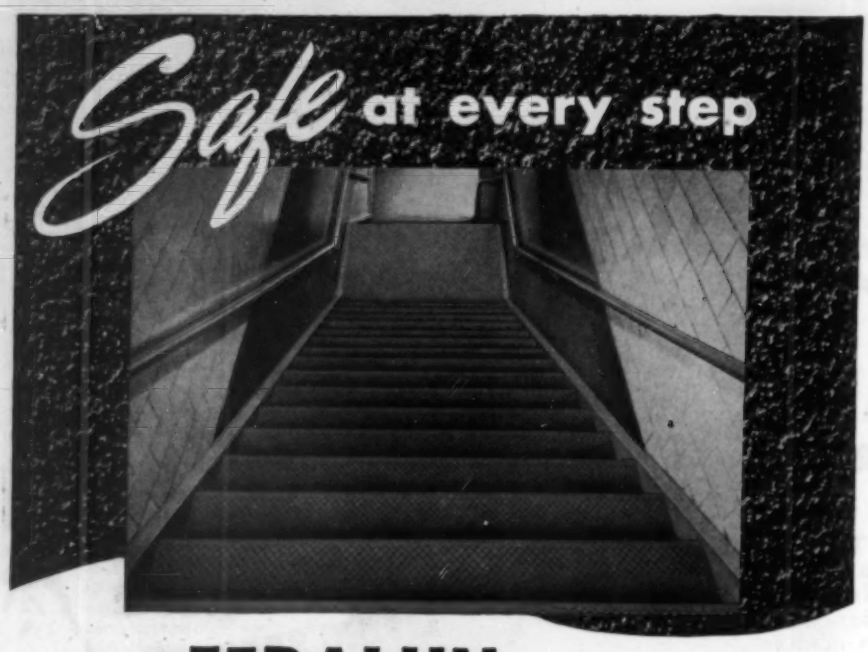
The venting problem for radiant heating coils is just the same as for any other forced hot water system; however, some points should still be stressed. When the system is being filled, petcocks at the end of the coils must be opened to release the air. After the system has been *completely* filled, any air that gets into the system must either leak in or be released by the air *at the boiler*. If a positive pressure of 2 or 3 psi is maintained in the coils, no air will leak into the system, so the only remaining source is the boiler. There are vents made for the purpose of venting the boiler; these vents should be located preferably at the boiler or at the high point by the expansion tank. The use of automatic air vents at high points is unnecessary; they frequently rust and become useless. The air that remains after filling the system will be carried along by the high velocity of the water and eventually expelled at the vent or collected in the expansion tank.

APPEARANCE OF RADIANT PANELS

The appearance of a radiant heating panel should remain unimpaired until it has been decided to redecorate the panel. This means that streaking and cracking must be considered in selecting the material and in constructing the panel.

It is generally accepted that present construction practices allowing ⅜ in. cover of plaster will prevent cracking and streaking of the panel. In addition to having an acceptable appearance, the material should have a high conductivity. If low conductivity materials are used, the required boiler water temperature will be increased and the controllability will be decreased.

The material should also withstand the operating temperature that is to be used. For example, some asphalt products tend to soften at temperatures of 100 F; therefore, these materials would be inadequate for coverings in halls where panel temperatures of 100 F are expected.



WITH FERALUN SAFETY TREADS

Workmen at the Curtiss Wright Plant, Propeller Division, Caldwell, N. J., go up and down these stairs . . . safe at every step.

Their shoe soles come to grips with non-slip Feralun Safety Stair Treads, cast iron, with wear-resistant abrasive embedded right in the walking surface.

Heavy traffic day in, day out — — but Feralun Safety Treads, built to take hard use, stay non-slip . . . last and last.

And that means low maintenance . . . and high safety.

4 TYPES:

Cast iron base . . . . . FERALUN
Bronze base . . . . BRONZALUN
Aluminum base . . . ALUMALUN
Nickel bronze base . . NICALUN

3 SURFACE STYLES:

hatched . . . plain . . . fluted

Use coupon below to get our free, illustrated catalog. Also consult Sweet's File, Architectural, 13 a-8.

AMERICAN ABRASIVE METALS CO. (AR 3-49)
460 Coit Street Irvington, N. J.

☐ Please send me your catalog on non-slip stair treads, floor plates, thresholds, elevator sills, and safety tile.

☐ Please have one of your safety engineers contact me.

Name..... Title.....

Company.....

Street.....

City..... State.....

WHEN THE FINEST COSTS THE LEAST . . . . . YOU WANT IT!

Drop-forged Von Duprins are the highest quality exit devices made. They have longer life and far greater strength. They add the precision, beauty and character of drop-forged metals to the doors on which you put them.

Yet, in the end, all this extra quality, this added dependability and fine workmanship cost nothing. The higher first cost is soon absorbed by the freedom from maintenance expense and the perfection of their trouble-free, attention-free, care-free operation. Drop-forged Von Duprins provide exit . . . safe and sure beyond comparison . . . at the lowest cost per year.

Isn't that just what you want?

VON DUPRIN DIVISION
VONNEGUT HARDWARE CO., INDIANAPOLIS 9, IND.

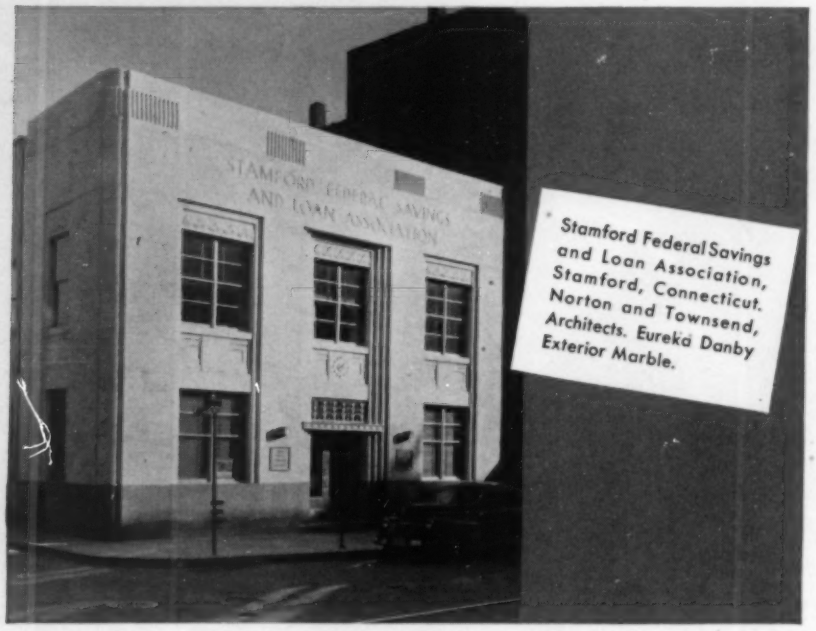
(*Continued from page 139*)

WOOD PRESERVATIVE

Insurance against premature replacement of millwork is among the benefits claimed by the manufacturer for *Tremco Wood Preservative*, a double-action treatment which is said to keep moisture out — reducing warping, shrinking, swelling — as well as preventing wood from rotting.

Usable for treatment of wood either during fabrication or at the time of installation, Tremco Wood Preservative is applied by impregnation, dipping, brushing or painting.

Strips of wood treated with Tremco and buried in the ground for test purposes were reported by the manufacturer to have remained in excellent condition. The Tremco Manufacturing Company, 8701 Kinsman Rd., Cleveland, Ohio.


Stamford Federal Savings and Loan Association, Stamford, Connecticut. Norton and Townsend, Architects. Eureka Danby Exterior Marble.

The architect has not only himself to please, but also the building owner and the public. He therefore chooses wisely when he specifies Vermont Marble. Proof of this is shown in this statement made by the owner of the above building in Stamford:

"We have never properly expressed our appreciation of the marvelously accurate work and the beautiful appearance of the front you furnished for our new building. Without doubt it is the finest business building front in Stamford. We have received a great many compliments." (Signed)
Charles G. Talbott, *Executive Secretary*.

Whether for building exteriors or interiors, or for Memorials, the correct variety of marble is now available, produced by the most modern plant equipment. Choose Vermont Marble for:

COLOR • CHARACTER • PERMANENCE • LOW MAINTENANCE

crystalline VERMONT MARBLE

VERMONT MARBLE COMPANY • PROCTOR, VERMONT

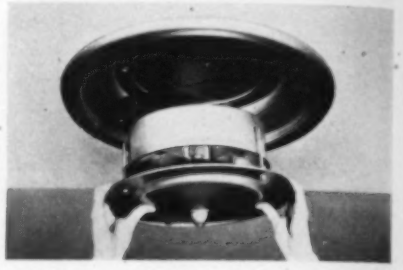
Branch Offices:
Boston • Chicago • Cleveland • Dallas • Houston • Philadelphia • Los Angeles • New York • San Francisco

In Canada: Ontario Marble Company, Ltd., Peterboro, Ontario and Toronto, Ontario
Brooks Marble & Tile Company, Ltd., Toronto, Ontario

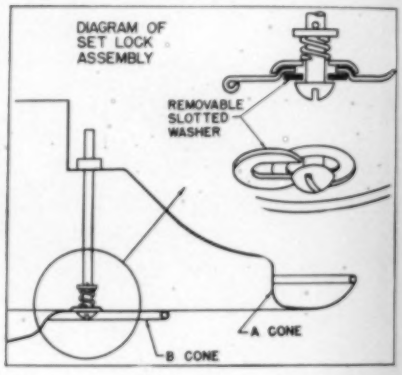
AIR DIFFUSERS MODIFIED

A modification in the design of the *Kno-Draft* adjustable air diffusers, a new, quick-opening set-lock assembly, is reported to reduce installation time and simplify cleaning and inspection by allowing the whole inner element of the unit to be removed or replaced in a few seconds.

The diffuser is comprised of an outer, stationary cone and an inner, removable cone. A slight upward pressure on the inner cone releases slotted washers which control springloaded catches (see diagram). With washers removed the holes in the inner cone slip over the heads of the bolts which secure the inner cone to the rest of the diffuser, and the element is removed. W. B. Connor Engineering Corp., 114 East 32nd St., New York 16, N. Y.



Slight upward pressure on inner cone of the air diffuser releases it for inspection



IMPROVED ELECTRIC DRYER

Addition of a new and improved heating element in the *Sani-Dri* electric face and hand dryer is reported by the manufacturer to cut drying time by 25 per cent without increasing consumption of current.

Replacement of present units by the new element can be accomplished by any maintenance man in a few minutes, according to the manufacturer. Chicago Hardware Foundry Company, North Chicago, Ill.

(*Continued on page 182*)

These Experiences are Proof

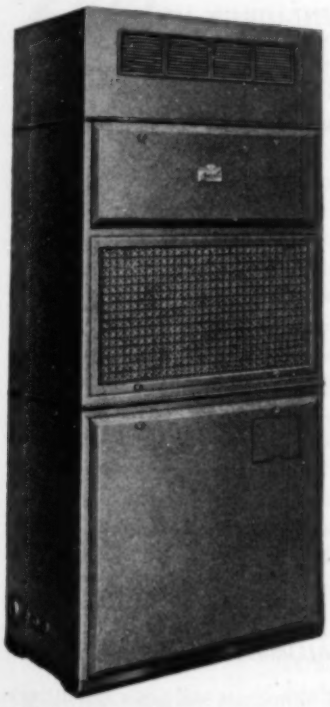
"Increased dollar volume and better employee efficiency have resulted from my decision to install Frigidaire Air Conditioning in my jewelry store," says Robert S. Cohen, Winchester, Ky. C. Ratcliff Henry, Winchester, handled the installation of these Frigidaire Store Conditioners.

"Frigidaire's high quality was well known to us," says B. F. Spitzig, vice-president of Sleepeck-Helman Printing Co., Chicago. "That's why we picked two Frigidaire Room Conditioners for relief from heat and grime." North Town Refrigeration Co., Chicago, sold the equipment.

"One of our best investments —both from the standpoint of employee efficiency and operating costs—is our Frigidaire Air Conditioning System," says Harold Star, executive vice-president of the Dallas Title & Guarantee Co., Dallas, Texas. The dealer was Joe Hoppe & Co., Dallas.

Frigidaire Air Conditioning

makes a good business better!



Frigidaire SC-501 Store Type Conditioner. Two-tone brown finish; welded steel construction; delivers up to 2,000 cu. ft. of conditioned air per minute; 12" centrifugal fan powered by ¾ H.P. motor, 230 V., 60-50 cycle, single phase AC; water-cooled compressor powered by 5 H.P. motor, 220 V., 60-50 cycle, 3-phase standard AC.

Frigidaire Packaged Air Conditioners for Stores, Offices and Homes

Yes, Frigidaire Packaged Air Conditioners can do big things for dollar volume—at mighty little cost. They are responsible for increases of up to 35% in many businesses. Yet they cost so little to install, operate and maintain that they often pay for themselves in a single summer!

The handsome, compact "package" shown at left contains everything necessary to cool, filter, dehumidify and circulate air. It can be installed right in the space to be air conditioned, with no interruption of building routine and no expensive building alterations. It can be used singly or in multiples, with or without a simple duct system. And a heating coil can be added for all-year operation!

Compressor, cooling unit and controls are precision-matched to work together like a championship team. That's why Frigidaire Air Conditioners operate at lowest cost, provide year after year of trouble-free service.

For a full line of products you can depend on, and a name you can depend on, call your dependable Frigidaire dealer. Or write Frigidaire Division of General Motors, Dayton 1, O. (In Canada, Leaside 12, Ont.)

Frigidaire Central Systems

Capacities, types and sizes to meet almost any air conditioning requirements.

Frigidaire Room Air Conditioners

Self-contained window and remote floor types. Easily installed. For rooms up to 750 sq. ft.

Frigidaire Air Conditioning

Over 400 Frigidaire commercial refrigeration and air conditioning products —most complete line in the industry.

For fast facts about Frigidaire Products — fill in and mail coupon today

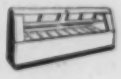
Frigidaire Air Conditioning
☐ Room size air conditioners. Store size air conditioners. Central systems.

Frigidaire Water Coolers
☐ Pressure, bottle and industrial types; central systems. Variety of sizes and capacities.

Frigidaire Reach-In Refrigerators
☐ Self-contained or remote types up to 60 cu. ft. Forced air or ice-making cooling units.

Frigidaire Ice Cream Cabinets
☐ Remote and self-contained models. 4-hole to 10-hole sizes.

Frigidaire Display Cases
☐ Self-service and standard types. Normal and low temperature models.



Frigidaire Beverage Coolers
☐ Both wet and dry models available in several sizes.

Frigidaire Compressors
☐ Sealed rotary and reciprocating types. Sizes up to 25 H.P.

Frigidaire Cooling Units
☐ Forced air, wet and dry expansion evaporative and ice-making types.

Frigidaire Home Appliances

- ☐ **Household Refrigerators**
- ☐ **Home Freezers**
- ☐ **Electric Ranges**
- ☐ **Kitchen Cabinets and Sinks**
- ☐ **Automatic Washer, Ironer, Dryer**
- ☐ **Electric Water Heaters**
- ☐ **Electric Dehumidifier**

Name.....

Firm Name.....

Address.....

City.....

County.....*State*.....

ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(*Continued from page 180*)

METAL ENTRANCE DOORS

Fenestra stock, hollow-metal entrance doors are now available for use in offices, apartments, stores, schools, etc.

Furnished in one standardized size, 3 by 7 ft., the doors may be used in single or double openings and are supplied with a standard cylinder lock. Bronze push and pull bars and bronze ball bearing hinges are supplied if desired. The doors may be hinged right or left to swing in or out.

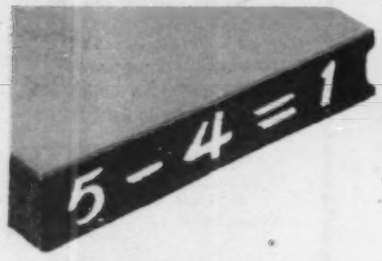
These doors come complete with frames and hardware machined, fitted and ready to assemble. Detroit Steel Products Co., 3113 Griffin St., Detroit 11, Mich.

"QUILTED" PLASTIC MATERIAL

Quilting without stitching is the feature of a new plastic material developed for use in upholstery and wall covering.

Sealtuft, which the manufacturer reports is resistant to scuffing, abrasion, alcohol, grease and dirt, is made by using electronic heat to seal Vinylite plastic sheeting, a layer of fire-resistant filler material, and a backing of Vinylite plastic film.

Available in a wide range of colors, the material may be had with front surface either plain or embossed in patterns resembling leather, sharkskin, moire or taffeta. Jason Corp., Hoboken, N. J.

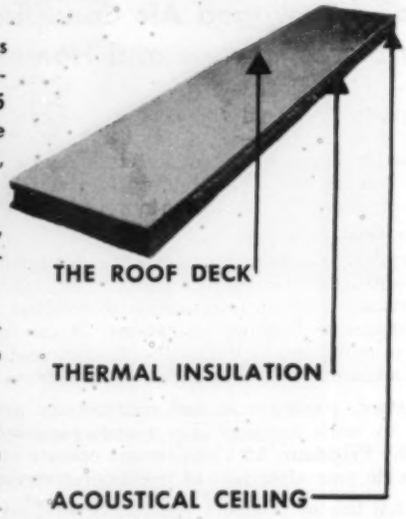


Save $1

OUT OF EVERY $5 by using the *Durisol* Insulated Roof Plank

This roof plank combines so many functions in one material...all at one low installation cost...that **$4 does the work of $5** as compared with other materials. Note the 3-in-1 advantages of this light-weight, precast, factory-coated plank:

1. Fireproof, reinforced, cement-surfaced, and ready for application of the built-up roofing.
2. Because Durisol itself is such an effective barrier against heat losses, no additional insulation is required.
3. Noise-deadening ceiling at no extra cost... distinctive and pleasing in appearance, with a sound absorption coefficient of 0.87 at 512 cycles.

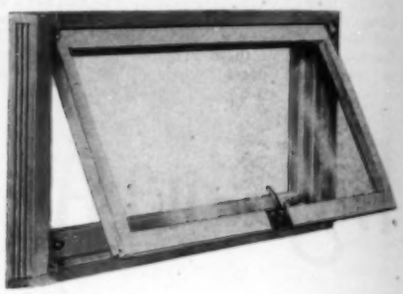


DURISOL is made from chemically mineralized wood fibres bonded with Portland cement and moulded under pressure. It is unaffected by moisture and is proof against rot, mould, vermin, termites—proved incombustible by laboratory tests.

Thickness	Width	Maximum Span	Weight per sq. ft.	Long Edge	Load
3¼"	16"	6'8"	15 lbs.	Tongue and Groove	40 lbs. per sq. ft. live load with high safety factor.
4¼"		8'	18 lbs.		

For complete information, write for folder (A.I.A. File Number 4-K). Also see catalog 3c/13a, Sweet's File Architectural, 1949.

DURISOL, INC. 420 Lexington Avenue, N. Y. 17, N. Y.



Prefab window comes in modular sizes

BASEMENT-UTILITY WINDOW

A completely prefabricated window for basements, cottages, tourist homes and similar applications is now being marketed.

Designed for sash reversibility (sash can be swung at top or bottom), the unit includes frame, glazed sash, hardware, chemical treatment of all wood parts, weatherstripping and (optional) screen and storm sash.

Modular sizing makes for easy installation in standard 8 by 8 by 16 in. concrete block walls — the window is two blocks high and 2, 2½ and 3 blocks wide. The sash can be reversed without tools and can also be combined in ribbon or stack fashion for additional fenestration. Andersen Corp., 1370 Northwestern Bank Bldg., Minneapolis, Minn.

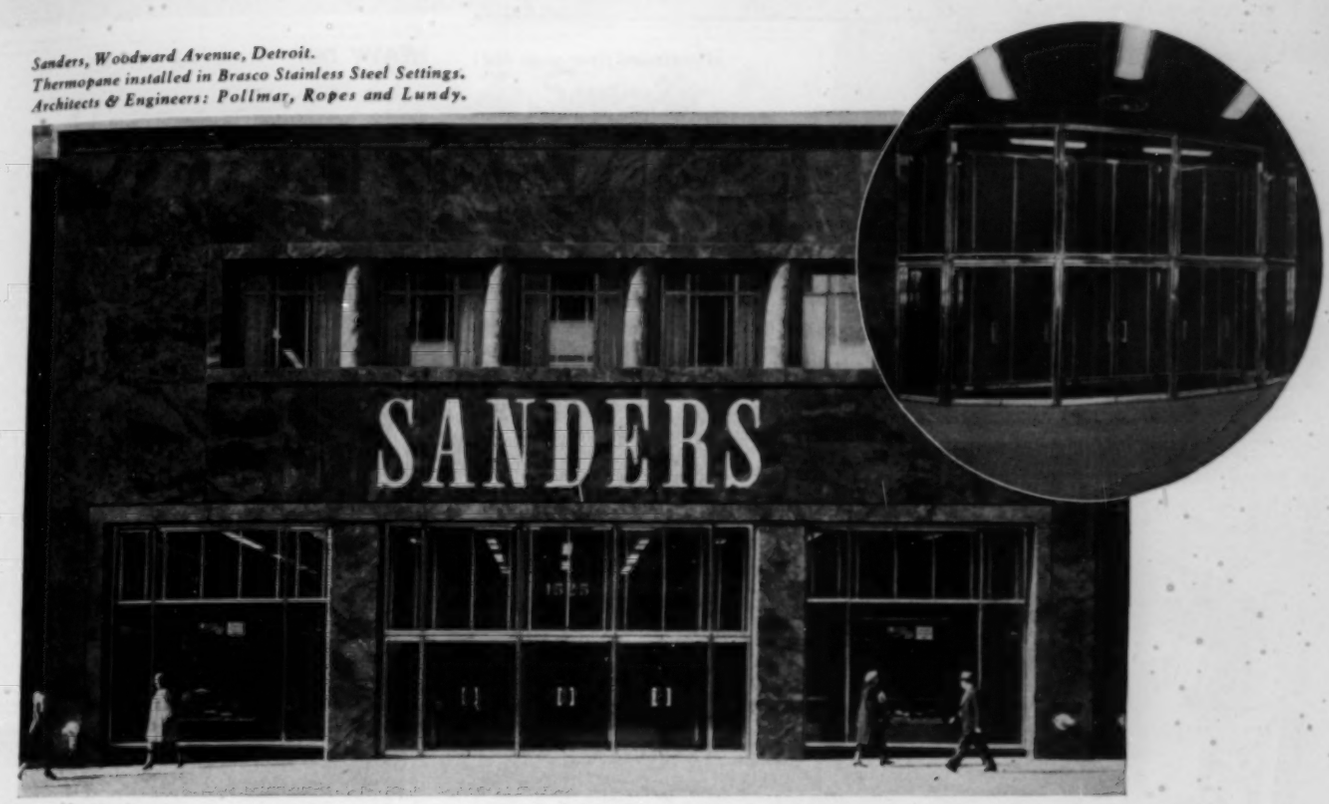
CAST ALUMINUM SOIL PIPE

Gasco aluminum soil pipes and fittings for above-ground plumbing installations such as venting, waste, drainage, stacks and downspouts are distinctive for the lightweight feature, according to the manufacturer, who reports the components to be 75 per cent lighter than extra heavy cast iron pipe.

Other assets claimed for the soil pipe are resistance to corrosion, good appearance and immediate availability, and it is said also to have greater impact

(*Continued on page 184*)

Sanders, Woodward Avenue, Detroit.
Thermopane installed in Brasco Stainless Steel Settings.
Architects & Engineers: Pollmar, Ropes and Lundy.



More SELLEVISION* *per front foot*

THE emphasis on *Sell*evision in advanced store front design is increasingly evident. *Sell*evision permits the shopper to see deeply into the store interior and to preview its alluring attractions. With the reduced height of Safety-Set metal sections, greater *Sell*evision is actually provided.

The largest plates of glass are held securely in the deeper grip which characterizes all Brasco sash. Heavy-duty bars, substantially reinforced, supply extra protection for enlarged and heightened areas. The complete line is expertly fabricated and handsomely finished in both stainless steel and anodized aluminum of heavy gauge.

Many additional features contribute to Safety-Set's superiority. For nearly four decades we have worked in close collaboration with the country's leading architects and store designers. Safety-Set Construction embodies *their* ideas as well as our own. That's why Safety-Set offers the utmost in practical construction and distinguished appearance, for wisely spent store front dollars. *©

★ ★ A COMPLETE LINE FOR EVERY DESIGN ★ ★

Brasco SAFETY-SET STORE FRONTS

BRASCO MANUFACTURING CO.
HARVEY • (Chicago Suburb) • ILLINOIS
Specialists in Metal Store Front Construction for more than 35 Years

ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(Continued from page 182)

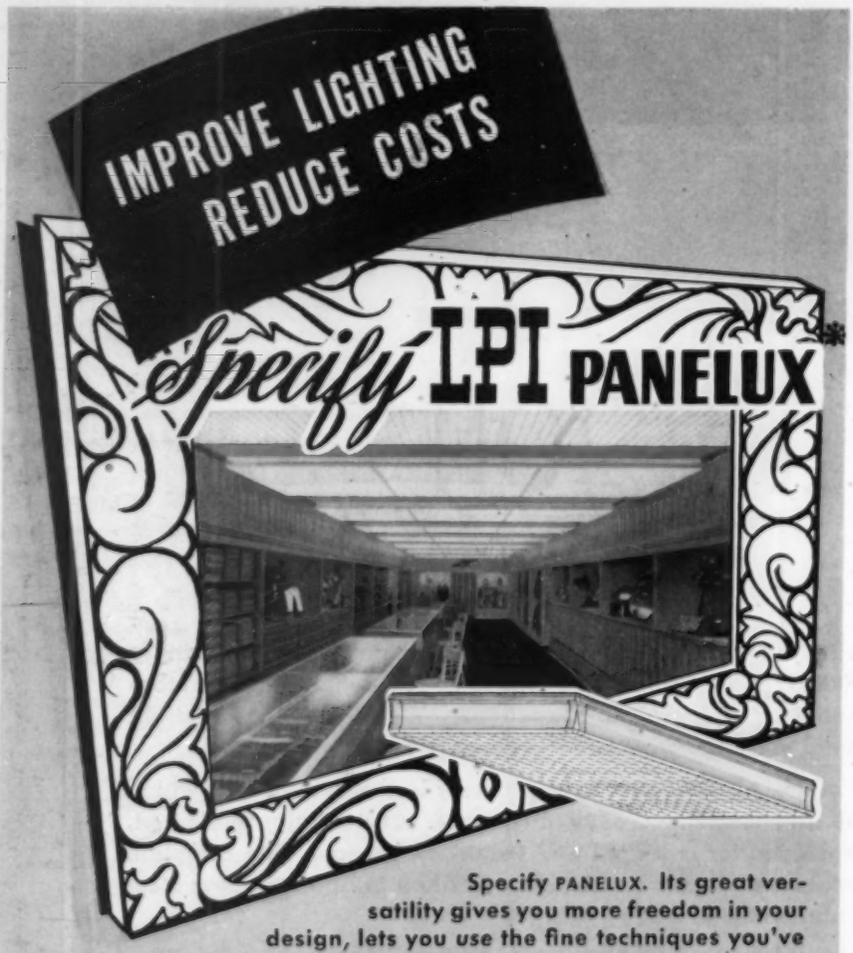
strength than cast iron while being far less brittle. The pipe and fittings are furnished in 2, 3 and 4 in. sizes. General Aluminum Supply Corp., Rialto Bldg., Kansas City 6, Mo.

TRIGGER-ACTION TACKER

A trigger-action stapler especially designed to work in places where there is not room enough to swing a hammer is now available.

Bostitch Model T-5, for driving staples into wood and similar materials, has a short, narrow base that gets into small places and is said to drive the staple within $\frac{1}{16}$ in. of inside corners, moldings, etc.

Three models are available, using light, medium, and heavy wire staples of varying lengths. The machine weighs only 3 lb. Bostitch, 651 Mechanic St., Westerly, R. I.



Specify PANELUX. Its great versatility gives you more freedom in your design, lets you use the fine techniques you've developed. PANELUX provides the most light for the least cost, and it achieves lighting harmony in size, shape and color. LPI's new PANELUX is the only fluorescent luminaire with all these important features:

1. UNLIMITED APPLICATIONS – Installed individually, end-to-end or side-by-side. With four sizes to choose from, there's no limit to the number of lighting layouts you can achieve.
2. A COMPLETE FIXTURE – it combines chassis and louvers and requires only one installation operation.
3. NO LOUVER MAINTENANCE – with Fi-bord* Louvers. You *don't clean Fi-bord, you replace it* – at much less cost and in less time than it takes to clean ordinary louvers.
4. FIVE COLORS – Fi-bord Louvers available in white and in pastel shades of blue, pink, green and yellow.

Write today for the new PANELUX Bulletin No. 420.

All LPI fixtures are union made, U-L approved and sold through leading electrical wholesalers.

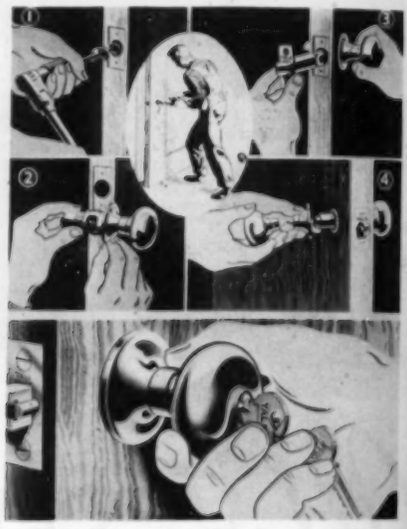
Lighting PRODUCTS, INC.
HIGHLAND PARK, ILLINOIS

* Trade Marks – Patents Pending

HEAVY DUTY TUBULAR LOCKS

Yale Heavy Duty Tubular Locks, made to be assembled in 30 seconds, have been developed in an effort to cut building costs by reducing installation time.

Only two small holes bored in the door are necessary for installation; the entire mechanism of the new locks has been put into two cylindrical housings. The knob and cylinder axis



Only two small holes in door are needed for installation of new tubular locks

fit into a hole bored through the door and the bolt goes into another hole bored into the edge of the door.

Five basic locksets, four of them with the optional deadlocking bolt, to make a total of nine different models, comprise the new line. The Yale & Towne Mfg. Co., Chrysler Bldg., New York 17, N. Y.

GAS FLOOR FURNACE

An automatic gas floor furnace which requires no basement or utility room is reported by the manufacturer to provide the advantages of "big home" automatic heating at a fraction of the cost.

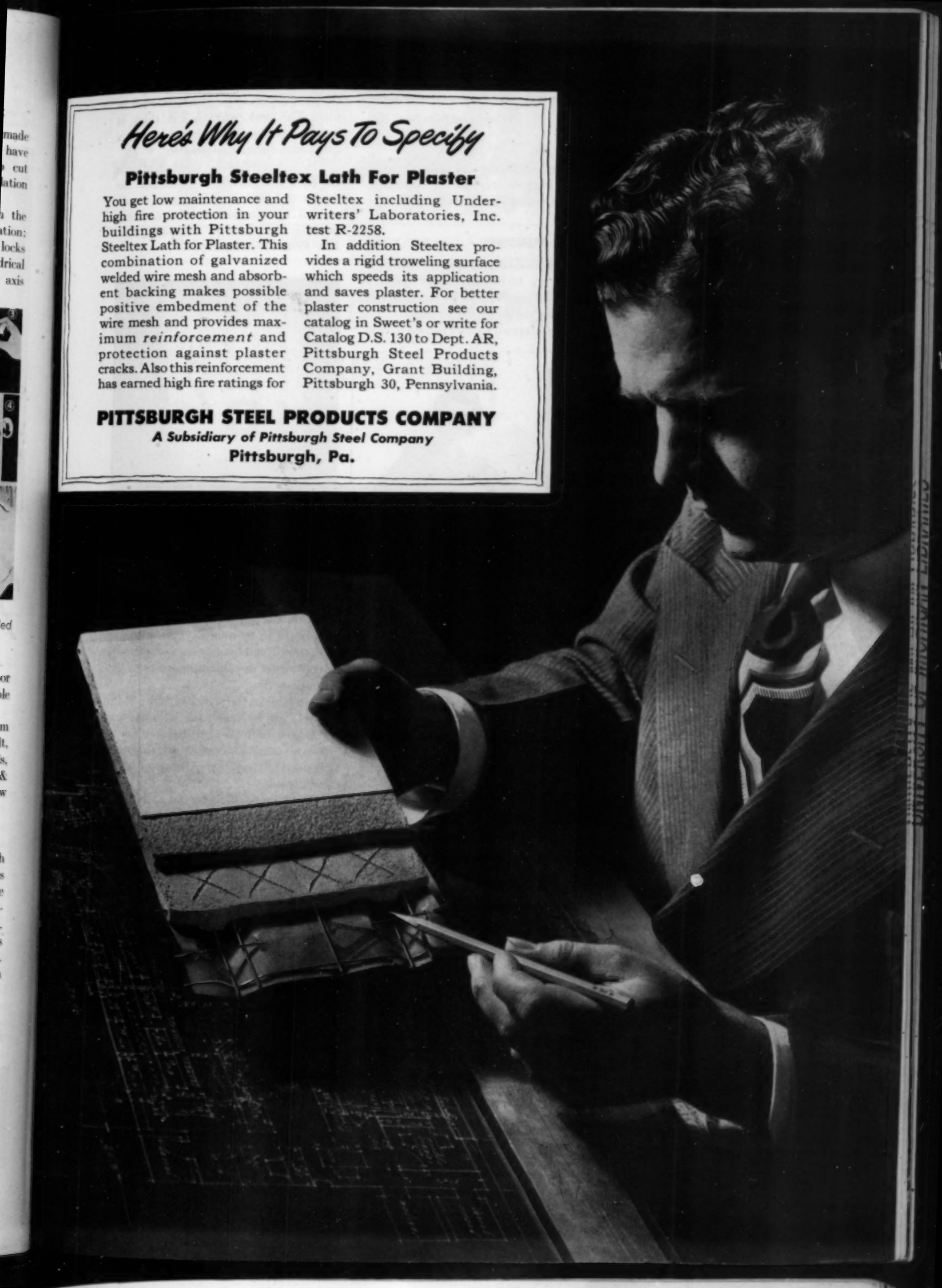
The unit, which is 25½ in. deep, is installed directly beneath the floor. Only the floor-level grill through which the heat flows is visible from the room.

Desired temperature is maintained by a wall thermostat, which automatically turns the gas supply off and on. Tennessee Enamel Mfg. Co., Nashville, Tenn.

ACOUSTICAL TILE

Development of a new acoustical tile composed of compressed glass fibers has

(Continued on page 186)


Here's Why It Pays To Specify
Pittsburgh Steeltex Lath For Plaster
You get low maintenance and high fire protection in your buildings with Pittsburgh Steeltex Lath for Plaster. This combination of galvanized welded wire mesh and absorbent backing makes possible positive embedment of the wire mesh and provides maximum reinforcement and protection against plaster cracks. Also this reinforcement has earned high fire ratings for Steeltex including Underwriters' Laboratories, Inc. test R-2258.
In addition Steeltex provides a rigid troweling surface which speeds its application and saves plaster. For better plaster construction see our catalog in Sweet's or write for Catalog D.S. 130 to Dept. AR, Pittsburgh Steel Products Company, Grant Building, Pittsburgh 30, Pennsylvania.
PITTSBURGH STEEL PRODUCTS COMPANY
A Subsidiary of Pittsburgh Steel Company
Pittsburgh, Pa.

(*Continued from page 184*)

been announced by the manufacturer.

The lightweight, perforated tile is described as non-combustible, and the manufacturer reports that its high sound-absorbing properties are supplemented by excellent thermal insulation value.

Weighing 0.7 lb. per sq. ft., the tile comes in two sizes, 12 by 12 in. and 12 by 24 in., both ¾ in. thick.

The tile is said to be unaffected by humidity conditions and claimed not to warp, buckle, expand or contract. Owens-Corning Fiberglass Corp., Toledo 1, Ohio.

HOUSE NUMBERS

Metal numbers permanently cemented to a 12 by 12 in. glass block create a new house number said by the maker to be clearly visible by day or night.

A weatherproof lacquer is used to coat the numbers after they are cemented in place. The block, which is 4 in. thick, is installed in the frame or masonry of a new house during construction.

The *Silhouette* house number utilizes the light from inside to illuminate the figures and is reported to give a soft general illumination to the entrance porch as well. Paul M. Burroway, P.O. Box 3592, Phoenix, Ariz.

House numbers are cemented to glass block

ASBESTOS CEMENT SIDING

Ceramo Asbestos Cement Siding is back on the market after a seven-year absence due to difficulty of obtaining necessary high-quality raw materials, according to an announcement from the manufacturer.

Available in the standard 12 by 24 in. shingle size in a wave line, straight line or thatch butt pattern, Ceramo has a base of portland cement and asbestos fibers said to be rotproof, wear-resistant, and firesafe.

Fused on at high temperatures, the ceramic-coated surface is smooth and hard, and its density prevents infiltration of moisture or dirt. The Philip Carey Mfg. Co., Cincinnati 15, Ohio.

FLUORESCENT FIXTURE

A new, slimline fluorescent lighting fixture has been designed particularly for stores, banks, institutional and public buildings having moderately high ceilings. The new fixture, *CSL-496*, is an unshielded unit utilizing four fluorescent lamps having a total power of 204 watts. It can be installed either surface or pendant mounted, individually or in continuous rows. To eliminate shadows in end-to-end installation, the 98 in. long unit is designed with a blunt end chassis. Both the chassis and the reflector, which is removable for installation

(*Continued on page 188*)

Specify Bradley Sanitary Washfountains

Schools educate students to cleanliness when modern, sanitary wash facilities are provided.

One Bradley DUO-Washfountain with health-protecting foot-control serves two persons simultaneously and takes the place of *two* ordinary wash bowls thus saving on maintenance and piping. Install DUOS in washrooms, cafeterias, laboratories, workrooms.

Modern foot-controlled sanitary DUO-Washfountain installation serves two simultaneously.

The large 54″ Bradley (below) with self-flushing bowl, foot-control, and single sprayhead, serves *8 to 10* persons simultaneously, each with a clean spray of running water.

Recent installations of Bradley Washfountains and Multi-Stall Showers include: University of Wyoming, Fremont School (Calipatria, Calif.), Tennessee College, Roanoke City School, Simmons School (Oak Lawn, Ill.), St. Joseph Glenbrook Academy (Clinton, Mich.), Univ. of Massachusetts, Pendleton (Ore.) School, West Phoenix High School, Lebanon (Ore.) Grade School, Brookward School (Kansas City, Mo.), Cedar Grove School (Shreveport, La.), St. Joseph (Mich.) School, Booker T. Washington School (Phoenix).

Below: Sanitary foot-controlled Bradley circular Washfountain protects students' health.

For suggestions on washroom layouts, write for illustrated Catalog 4701.

BRADLEY WASHFOUNTAIN CO., 2227 W. Michigan St., Milwaukee 1, Wis.

BRADLEY Washfountains

WORTHINGTON

Air Conditioning and Refrigeration Report

Worthington Pump & Machinery Corporation, Harrison, New Jersey

NEW EVAPORATIVE CONDENSER SAVES MANY COSTS

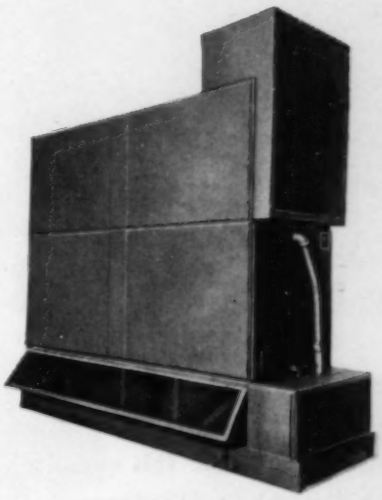
Where water for use in refrigerating condensers is expensive, high in temperature or difficult to secure and dispose of, the Worthington ECZ Evaporative Condenser saves water, equipment, space and money.

Water consumption is reduced 90% or more—only enough new water is added to make up for evaporation and keep the circulated water sweet and clean. No long line losses; and pumping costs are reduced proportionately.

Equipment such as cooling towers, water service and disposal facilities is not needed, saving investment cost, maintenance cost and space.

Prime surface coils are staggered to permit air deflection and wetting of the entire surface. Smooth surface makes washing easy and helps prevent scale accumulation.

Installation of this compact unit can be made inside or outside, in basement or on roof. Two types—Freon and Ammonia. Other features: Worthington Monobloc Pump, anti-corrosion fans (at slight extra cost), receivers available for Freon unit.



Worthington ECZ Evaporative Condenser. Unit contains condenser coils, water spray nozzles, integral refrigerant piping, pump, eliminator, fan, drive, etc.

Write us for new Bulletin C-1100-B28, giving complete information. Worthington Pump and Machinery Corporation, Harrison, N. J. *Specialists in air conditioning and refrigeration for more than 50 years.* A8-33

WORTHINGTON

Air Conditioning and Refrigeration

Higbee Is Ahead On Air Conditioning, Too

One of the country's greatest department stores, considered throughout the retail business as a pace-setter, is Higbee's in Cleveland.

17 years ago, a Worthington 1,000-ton carbon dioxide refrigeration plant was installed to provide air conditioning. When it recently became necessary to enlarge the installation, the success of the original equipment suggested having Worthington provide the new machinery.

The new installation provides for 2,000 tons of Worthington centrifugal refrigeration.

J. Gordon Turnbull, Inc., Consulting Engineers.

North American Mfg. Co. plant, Cleveland, Ohio.

Another Modern Plant Selects *Modern* Air Conditioning

When North American Manufacturing Company—manufacturer of oil and gas-fired furnaces—built its new plant in Cuyahoga Heights, Cleveland, it decided first, to install air conditioning in its offices and, second, to install the most *modern* air conditioning equipment.

These decisions led to the selection of a 30-ton Worthington 4-HF-6 air conditioning unit. This is the 6-cylinder W type, operating on Freon-12, with water-cooled condenser and full force-feed lubrication.

Vincent Eaton, Consulting Engineer.

Why "Balanced Air"? Why Worthington?

The ideal air conditioning or refrigeration system consists of machinery all manufactured—not just assembled—by one company. This makes more possible a perfect *balance* among all interrelated machinery.

Worthington is the company that *manufactures all* the vital "innards"—compressors, condensers, engines, turbines, pumps. The result is a completely *integrated* system—for more efficient, more economical operation.

That's why *there's more worth in Worthington.* See your nearby Worthington distributor—in the Classified Telephone Book.

(*Continued from page 186*)

and inspection, are finished in white. The end caps, which do not have to be removed or disturbed for servicing, are aluminum finished. Sylvania Electric Products, Inc., 500 Fifth Ave., New York, N. Y.

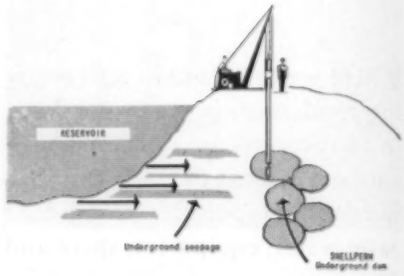
UNDERGROUND DAM

Shellperm, a new method of controlling subsurface seepage which may cause loss or pollution of water, consists of a subterranean barrier built without excavating by injecting an asphalt emulsion into the earth through a pipe.

In addition to its function in water conservation, the originator claims it can also be used to check seepage around tunnels, road beds or other subsurface structures, without the use of such relatively expensive techniques as sheet piling.

Pumped under low pressure through a metal pipe driven into the ground, the asphalt emulsion spreads out and then coalesces, producing a mass impermeable to water. After repeated injections at progressively higher levels have produced a vertical asphalt column, the pipe is moved and the process repeated until overlapping columns form an underground dam.

Special importance is attached to the development because at depths of more than a few feet, control of underground movement of water has heretofore been costly and difficult. Shell Oil Company, Inc., 50 West 50th St., New York 20, N. Y.



Asphalt pumped under ground forms barrier to prevent loss or pollution of water

ATF Educational Planning Service . . .

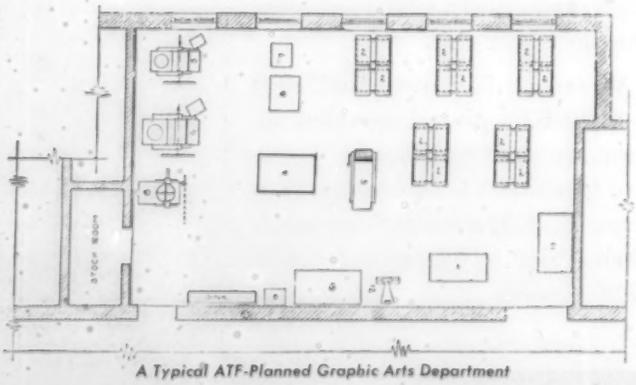
A Typical Planning Committee at Work

for School Architects and Administrators

The following ideal room layouts complete with item specifications are available on request. Other special room layouts will be prepared when local conditions do not permit the use of these standard plans.

		Square Feet
Junior High		
6-J	6-10 pupils	528
12-J	12-15 pupils	840
15-J	15-19 pupils	960
20-J	20-24 pupils	1030
Senior High		
6-S	6-10 pupils	598
11-S	12-15 pupils	910
15-S	15-20 pupils	1040
20-S	20-25 pupils	1248
Vocational		
10-V	10-20 pupils	2240
10-VO	10 pupils	1152
(Complete Offset Dept.)		
20-V	20-25 pupils	2968
Teachers College		
20-TC	15-25 students	1430

The ATF Department of Education has assisted School Architects and Administrators for over 30 years in the planning of Graphic Arts Departments. This specialized engineering service is available without obligation to school officials and architects who are preparing new school building plans. • In the preparation of all layouts, due consideration is given to the correct location of the equipment to provide for maximum operating efficiency, correct lighting and pupil safety.



A Typical ATF-Planned Graphic Arts Department

American Type Founders Sales Corporation

Department of Education

200 Elmora Avenue, Elizabeth B, New Jersey

NEW SHADE IN STRUCTURAL GLASS

Vitrolite structural glass now comes in a tenth shade, Sky Blue, the first new color to be added to the line in 1949.

Sky blue is described as a more subdued shade, deeper and richer, than the prewar Princess Blue, which it replaces. It is being produced in $1\frac{1}{32}$ in. thickness with a fire-polished surface.

Vitrolite is considered especially suitable for bathroom and kitchen in the home and for rest rooms in public buildings because its color is permanent, being inherent in the glass itself. Libbey-Owens-Ford Glass Co., Nicholas Bldg., Toledo 3, Ohio.

CONVECTOR RADIATORS

Designed for household, institutional and commercial installations, a new line of *Type F Convector-Radiators* is said to combine attractive appearance with high heating efficiency.

Cabinets designed for either free standing or semi-recessed installations are made of formed steel with removable front panel. Stamped louvers integral with the front panel give directional circulation of air into the room.

(*Continued on page 190*)

NEO-RAY *ML-2448*

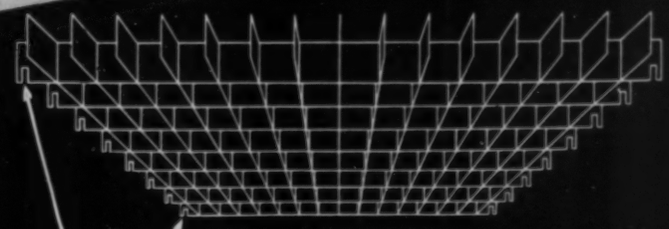
LOUVRED CEILING

ADAPTABILITY UNLIMITED

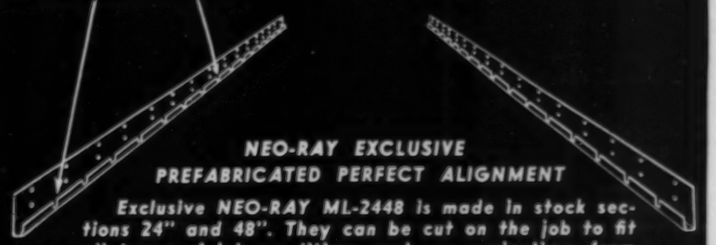
ARCHITECTS and UTILITIES Specify NEO-RAY Products!

Score with these Features

MARTIN'S DEPT. STORE



EXCLUSIVE MATING SLOTS AND TRACK ASSURES PERFECT ALIGNMENT



NEO-RAY EXCLUSIVE PREFABRICATED PERFECT ALIGNMENT

Exclusive NEO-RAY ML-2448 is made in stock sections 24" and 48". They can be cut on the job to fit all types of job conditions such as: projections from wall, curved areas and center columns and yet maintain rigid and perfect alignment, no corkscrew effect.

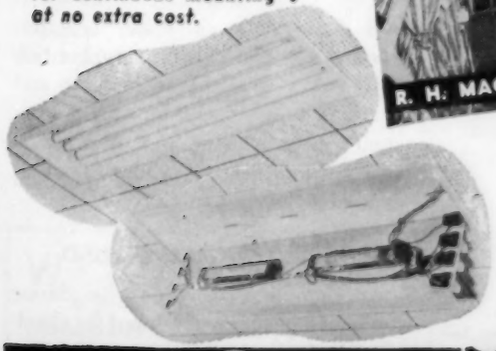
BRITISH-IRISH RAILWAYS

SKYLETTE RECESSED FIXTURE

- ✓Converts to hinged louvred or hinged glass bottom.
- ✓Hinged wiring channel.
- ✓All parts packaged for continuous mounting at no extra cost.

R. H. MACY 34th St.

PARIS DECORATORS



SOLD THROUGH ELECTRICAL WHOLESALE JOBBERS

VISIT NEO-RAY'S BOOTH 147-148 AT THE 3rd INTERNATIONAL SHOW, HOTEL STEVENS, CHICAGO

Let us show you simplicity of NEO-RAY'S layout. Use coupon below to write for free booklet TODAY.

Neo-Ray PRODUCTS, INC. NEW YORK 10, N. Y.

DEVELOPERS AND PRODUCERS OF THE LATEST IN LIGHTING

WATCH FOR NEO-RAY'S NEW SLIMLINE FIXTURES!

NEO-RAY PRODUCTS, INC. AR3
313 East 22nd Street
New York City 10
Gentlemen:

Without cost or obligation please send me your booklet on Neo-Ray Louvred Ceiling.

Name .....
Address .....
City ..... Zone ..... State .....

(*Continued from page 188*)

Copper tubes and aluminum fins of the heating elements are intended to insure prompt response to heat-control devices, and die-formed collars on fin-holes give large heat transfer contact between tube and fin instead of the line contact afforded by mere punching of fin holes.

Heating elements are available without convector cabinet for use in buildings where specially designed concealed radiation is specified. They come in standard 4, 6, or 8 in. widths and lengths up to 64 in. Fedders-Quigan Corp., Buffalo 7, N. Y.

EXPLOSION-PROOF HEATER

The new *Electromode All-Electric Explosion-Proof Heater* is expressly designed for use where inflammable gases, mixtures, or other highly flammable substances are manufactured, used, handled or stored, all locations specified by Underwriters' Laboratories in Class 1, Group D.

Fire, shock and burn hazards are said to be eliminated by the Safety-Grid, the patented, cast aluminum, natural convection feature of the heating element. The element consists of a nickel chromium resistor wire, insulated and sheathed in seamless metal tubing, and imbedded in a one-piece finned aluminum casting.

The Electromode Explosion-Proof Heater has been approved by the Underwriters' Laboratories, Inc. Electromode Corp., 45 Crouch St., Rochester 3, N. Y.

Electric heater specially designed for use where flammable vapors are present

TILE FLOORING

A chemically reacted combination of plastics makes *Corlon Tile*, a new luxury flooring recently put on the market.

Reported to offer very high resistance to wear, Corlon is said by the maker to have the depth of color, beautiful graining and plate finish of rubber tile.

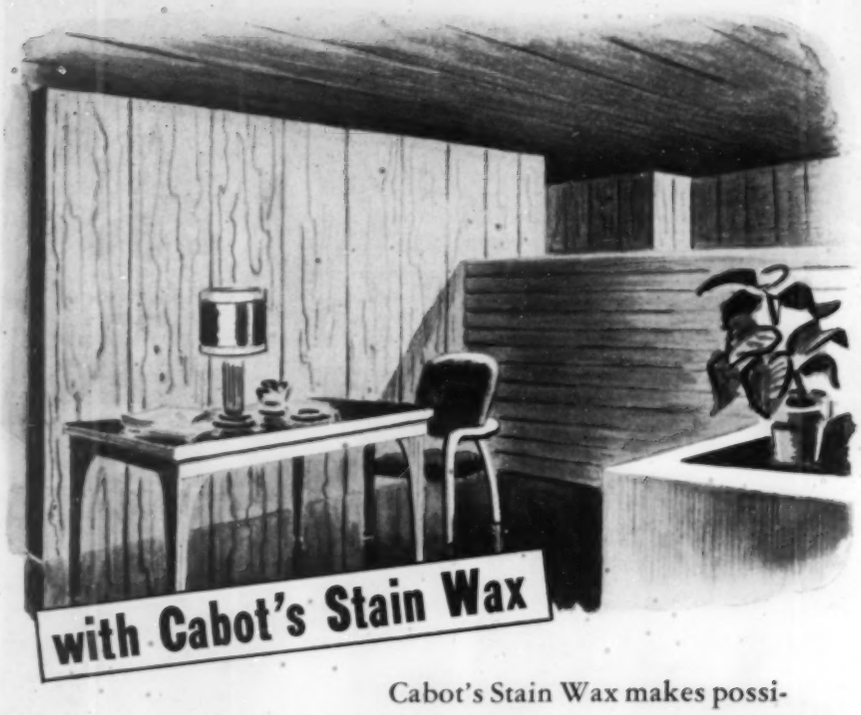
The tile is available in 10 colors and comes in four sizes, 6 in. square, 9 in. square, 12 in. square, and 18 in. by 36 in., all ⅛ in. thick. Armstrong Cork Co., Lancaster, Pa.

MASTIC GLAZING COMPOUND

An aluminum colored, mastic glazing compound has been developed for aluminum windows which requires no painting because the necessary coloring and protection are incorporated within the mastic itself. According to the manufacturer, *Tremglaze* is applied just like putty, sets firm, bonding tightly to aluminum mun-

(*Continued on page 192*)

Unique Interior Effects



Cabot's Stain Wax makes possible a variety of striking effects for interior woodwork. With a single application, Cabot's Stain Wax produces the color of a penetrating stain and the lustre of a soft wax finish. Available in many unique light shades including white and gray. The transparent wax surface is long lasting and easy-to-clean.

Write today for **FREE SAMPLE** and **COLOR CARD.**
See for yourself what Cabot's new Stain Wax can do.

SAMUEL CABOT, INC.
322 Oliver Building, Boston 9, Massachusetts

WELDWOOD PANELING . . . one basic reason

for the architectural excellence of THE ZILBOORG HOUSE

This interesting Dri-Built home was designed on a 4′ module . . . to make most efficient use of Standard Weldwood Panels

ARCHITECT Percival Goodman's modern technique and use of modern materials make a showplace of the recently completed home of Dr. & Mrs. Gregory Zilboorg, Bedford Village, New York.

Almost every room is paneled in Weldwood, using either birch, maple, cedar or oak. And . . . taking advantage of the ease with which "built-ins" can be planned into Weldwood walls . . . Mr. Goodman provided extensive cabinet and storage wall accommodations in the bedrooms, kitchen, dining room and living room . . . all executed in matching Weldwood.

Other features include ceilings of acoustical tile . . . brick-paved flooring in the entrance foyer, with most of the other floors in cork tile . . . and a dead-flat built-up roof which is flooded with two inches of water throughout the summer for cooling purposes.

Another interesting detail is the use, in most rooms, of Keyhole Standards and Brackets extending from floor to ceiling between each Weldwood panel. This makes possible *easily moveable,* random width shelving almost anywhere in the house. In addition, the metal strips contribute an interesting decorative effect to the Weldwood-paneled walls.

Add other advantages of dri-wall construction, such as tight, rigid sheathing and sub-floors . . . fast, economical construction . . . and you can see why this particular design gives a client a house he will be proud of.

But don't limit your thinking of Weldwood just to the "modern" designs. Dri-wall construction and, especially, Weldwood-paneled interiors fit *any* architectural style.

So plan now to add extra appeal and convenience to your designs with Weldwood. There are many fine hardwoods, both domestic and imported, to fit right in with any motif. Write for complete information.

Looking from the dining room into the living room. Notice the commodious cabinets in dining room wall.

Maple Weldwood paneling and large windows make the nursery light and airy. Built-ins under the windows conserve floor space.

Again built-ins are accented in the birch-paneled living room and sliding-door closets in vestibule. Keyhole bracket, one of many used, is illustrated.

This Weldwood-paneled service wall saves many steps between the kitchen and dining room.

WELDWOOD Plywood

Weldwood Plywood and Mengel Flush Doors are products of

UNITED STATES PLYWOOD CORPORATION New York 18, N. Y. — **THE MENGEL COMPANY** Louisville 1, Ky.

Distributing units in Baltimore, Boston, Brooklyn, Buffalo, Chicago, Cincinnati, Cleveland, Detroit, Fresno, High Point, Los Angeles, Milwaukee, Newark, New York, Oakland, Philadelphia, Pittsburgh, Portland, Ore., Richmond, Rochester, San Francisco, Seattle. Also U. S.-Mengel Plywoods, Inc. distributing units in Atlanta, Birmingham, Dallas, Houston, Jacksonville, Kansas City, Kans., Louisville, New Orleans, San Antonio, St. Louis, Tampa. *In Canada:* United States Plywood of Canada, Limited, Toronto. *Send inquiries to nearest point.*

Weldwood* Hardwood Plywood
Douglas Fir Weldwood
California Pine Weldwood
Mengel Flush Doors
Weldwood Fire Doors
Weldwood Flush Doors
Douglas Fir Doors
Overhead Garage Doors

Tekwood* (paper-faced plywood)
Protekwood
Weldwood Glue* and other adhesives
Weldtex* (striated plywood)
Decorative Micarta*
Flexwood*
Flexglass*
Firzite* and Satinlac*

*Reg. U. S. Pat. Off.

Weldwood
Plastics and Wood Welded for Good

Weldwood Plywood is made in both Interior and Exterior types, the former bonded with extended urea resins and other approved bonding agents; the latter with phenol formaldehyde synthetic resin.

(Continued from page 190)

tins, remains resilient and is water- and weatherproof to insure leak-proof windows without maintenance costs of painting. Tremco Mfg. Co., 8701 Kinsman Rd., Cleveland, Ohio.

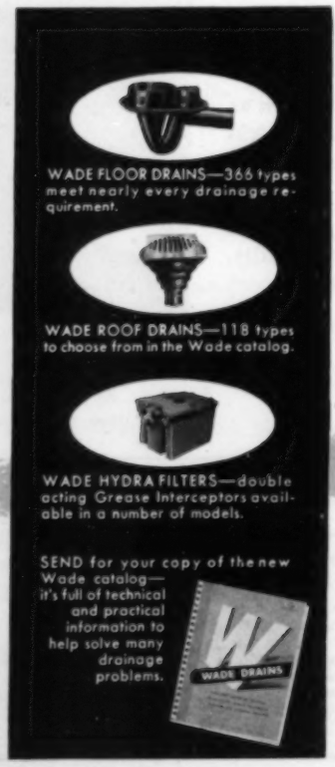
FOLDING LUNCHROOM TABLES

All-steel, folding table and bench units designed to convert gymnasiums, auditoriums and similar areas into lunch rooms are now being offered with marbelized as well as solid color linoleum tops.

These folding tables are available in two types — against-the-wall and in-the-wall units. The first type folds into a cabinet that extends 7 in. from the wall, and can be installed in existing buildings without remodeling. The second type is built into the wall in new construction. Schieber Mfg. Co., 12720 Burt Rd., Detroit, Mich.

WANT HELP
with
TOUGH DRAINAGE PROBLEMS?
ASK WADE
OF ELGIN

Constant engineering development and research, backed by 84 years manufacturing "know-how" make Wade a popular source among leading architects for help with tough drainage problems. Take advantage of Wade's technical cooperation on any job that's bothering you. It's a way to save time and there's no obligation—write us, today!


WADE FLOOR DRAINS—366 types meet nearly every drainage requirement.
WADE ROOF DRAINS—118 types to choose from in the Wade catalog.
WADE HYDRA FILTERS—double acting Grease Interceptors available in a number of models.
SEND for your copy of the new Wade catalog—it's full of technical and practical information to help solve many drainage problems.
WADE DRAINS

WADE
WADE MANUFACTURING CO.
ELGIN, ILLINOIS

STAINLESS STEEL SHOWER CABINET

The *Bathe-Rite* Stainless Steel Shower Cabinet is available especially for application where maintenance is a big factor such as hotels, hospitals, institutions and industrial plants.

Every item in the construction of the new shower cabinet is said to be corrosion resistant — from the porcelain enameled reinforced receptor to walls, fastenings, shower head, valves and curtain rings.

This shower cabinet, 36 in. in size, is said to be particularly easy to install. Milwaukee Stamping Co., Bathe-Rite Div., 865 S. 72nd St., Milwaukee 14, Wis.

CELLULAR CEILING

A new type of louvered ceiling for diffused lighting has been developed which consists of thin, corrugated, steel strips prefabricated into honey-combed panels. The panels fit together into a single continuous ceiling when hung below lighting fixtures.

The panels come in 24- or 30-in. widths and in lengths varying by 6 in. steps from 96 down to 12 in. The light weight of *Cell-Ceil*, 12 ounces per sq. ft., is said to eliminate cumbersome, expensive hanging equipment.

The Cell-Ceil panels are galvanized, bonderized and finished in pastel shades of baked enamel. Federal Enterprises, Inc., 8700 S. State St., Chicago 19, Ill.

MODULAR FURNACE

With the *Mueller Climatrol Modular Furnace*, the home owner can buy a complete winter and summer air conditioning system in installments.

The basic unit is a gravity furnace with oil or gas automatic firing. A forced circulation blower and a summer cooling unit can be added later.

Standardization and interchangeability of the units allows the system to be expanded without making the original equipment obsolete. L. J. Mueller Furnace Co., 2005 W. Oklahoma Ave., Milwaukee 7, Wis.

AUTOMATIC HOT WATER AIR VALVE

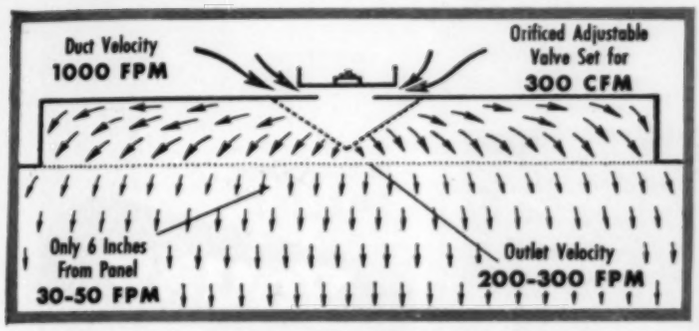
Complete elimination of air from convectors, radiators, mains, baseboard radiators and panel heating units is claimed for the new *Dole No. 20 Automatic Hot Water Air Valve*.

It is announced as "the first fully automatic hot water air valve." A coin or screw driver sets the selector screw

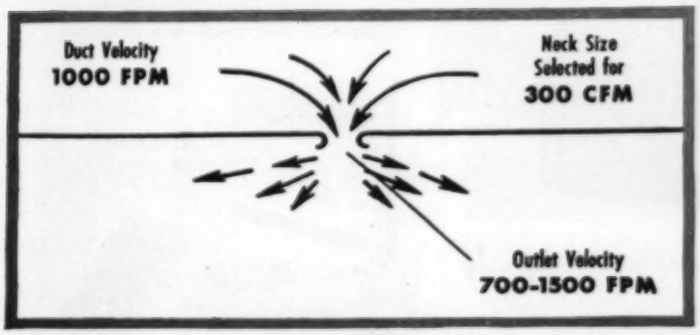
(Continued on page 194)

6-Exclusive Advantages of Low Velocity Air Diffusion!*

MULTI-VENT=LOW VELOCITY



ALL OTHER DIFFUSERS=HIGH VELOCITY

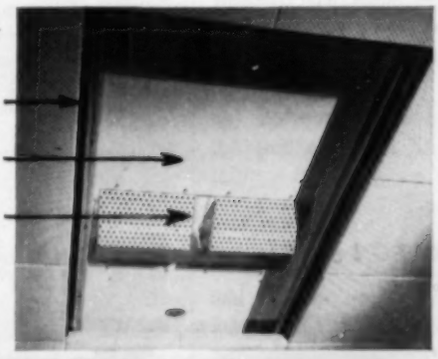


Concealed Multi-Vent Panel *exposed by removal of six squares of metal acoustical ceiling.*

Panel Frame . . . *installed in the bottom of air supply duct.*

Control Plate . . . *supporting one or more valves per panel, is hinged in panel frame providing ready access to duct above for cleaning.*

Pressure Displacement Air Valve . . . *single adjusting screw raises, and lowers a valve plate above opening in control plate to regulate volume of air flow from duct into dual V-shaped primary distribution sections, the design of which insures a perfectly even distribution of air over the entire perforated area below panel.*



PYLE-NATIONAL

MULTI-VENT*

LOW VELOCITY AIR DIFFUSION

*Reg. U. S. Pat. Off. by the Pyle-National Co.

***Pyle-National Multi-Vent's** unique principle of low velocity, pressure displacement air diffusion through perforated metal is fully protected by U.S. and foreign patents. Only with Multi-Vent can you enjoy its benefits.

1 No Strong Air Streams to Direct! *Only with Multi-Vent* are duct velocities so radically reduced (within the diffuser itself) . . . diffusion so rapid, thorough and widespread . . . that no air movement in excess of ASHVE comfort zone requirements exists more than six inches away from the perforated distribution plate.

2 No Deflection Problems to Restrict Location or Capacity of Outlet Panel! *Only with Multi-Vent* can the location and the capacity of the diffuser be determined solely by load considerations assuring maximum effectiveness and efficiency. The proximity of seating locations or the relative positions of partitions and lighting fixtures—which must be a major consideration in locating high velocity diffusers to avoid drafts—need not be considered with Multi-Vent regardless of ceiling heights.

3 No Change in Air Diffusion Patterns When Desired Volume of Air Delivered is Varied! *Only Multi-Vent* has an adjustable pressure displacement valve which can be easily set for delivery of various amounts of air without disturbing the balance of the overall system. Neither single panel adjustments to suit occupants special requirements nor substantial reduction or increase of air capacity at source to meet seasonal demands will in any way affect the desired air flow pattern.

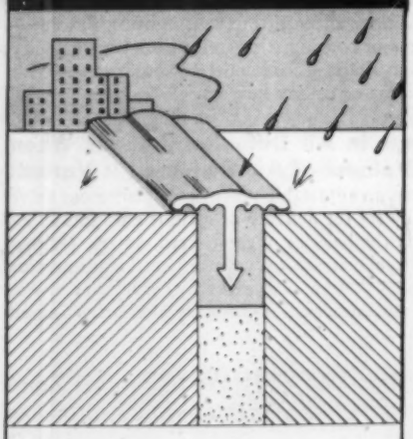
4 40% Higher DTD Will Meet Comfort Zone Requirements! *Only Multi-Vent* will permit raising the usual 15° Diffusion Temperature Differential to as high as 25° (with an eight foot ceiling for example). Thus 40% less air need be used to handle a given load making possible substantial economies in ducts, fans, filters and coils.

5 No Protruding Outlet Fixtures to Mar the Beauty of Modern Interiors! *Only Multi-Vent* can be completely concealed above the square perforated pans in a metal acoustical ceiling. Multi-Vent installed flush in all other type ceilings is less conspicuous than diffusers of any other make.

6 Incomparable Uniformity of Room Temperature and Humidity! Multi-Vent can achieve a temperature differential of as little as 1 degree within the comfort zone in all seasons . . . and 2 degrees is guaranteed! This insures *true* air conditioning comfort and will meet the most exacting air conditioning requirements for scientific research and industrial processing.

Write for complete specifications and selection data to THE PYLE-NATIONAL COMPANY, Multi-Vent Division, 1375 W. 37th St., Chicago 9, Illinois. Sales engineers and agents in the principal cities of the United States and Canada.

TO STOP LEAKS BEFORE THEY START-
Specify
TRADE MINWAX MARK
WEATHERCAP
for masonry joints!



• Seals joints in copings, cornices, wash and belt courses, once and for all! For sample and specification data, mail coupon.

SEND FOR YOUR SAMPLE

Minwax Company, Inc.
11 West 42nd St., New York 18, N.Y.

Please send me free sample of Weathercap with descriptive folder and specification data.

Name .....
Address .....
City .....
State .....

AR-3-49

(Continued from page 192)

for one of the three functions: fully automatic air eliminator, manual shut-off, manual venting. The Dole Valve Co., 1933 Carroll Ave., Chicago 12, Ill.

LAWN HOSE HOLDERS

An answer to the problem of hose storage is offered in the *Guardian Lawn Hose Holder*, said to be simple to manipulate and a contribution to fire protection.

A wire basket attached to the basement ceiling receives the hose, which will coil itself into the receptacle after it

Wire basket attached to basement ceiling stores garden hose until ready for use

is pushed with a very slight twist through a pipe leading from the exterior wall, according to the manufacturer's description.

The hose is always connected for immediate use with the water supply. Guardian Mfg. Co., P. O. Box 302, Minneapolis, Minn.

INTERCOMMUNICATION SYSTEM

An intercommunication system has been designed recently to enable workers to answer paged messages clearly and intelligibly from high noise level areas. The new circuit coordinates the operation of a "trumpet-type" reproducer and a two-way "staff station."

When the system is used to page a person in one of the high noise level areas, the message is reproduced at high volume through the trumpet station. To reply, the paged person depresses a lever on the nearest staff station. The trumpet is automatically cut out, and two-way

(Continued on page 196)

In Every Case... SPECIFY
YOUNG
SPECIALISTS IN HEATING, COOLING AND AIR CONDITIONING EQUIPMENT FOR HOME AND INDUSTRY

YOUNG
HEAT TRANSFER PRODUCTS

HEATING, COOLING AND AIR CONDITIONING PRODUCTS
Convectors • Unit heaters • Heating coils • Cooling coils • Air conditioning units • Evaporative condensers

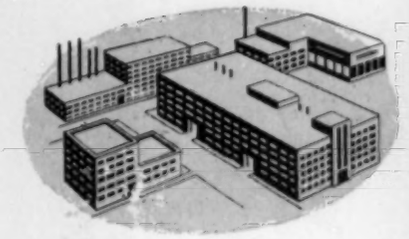
AUTOMOTIVE PRODUCTS
Gas, gasoline, Diesel engine cooling radiators • Heat exchangers • Intercoolers • Oil coolers • Supercharger intercoolers

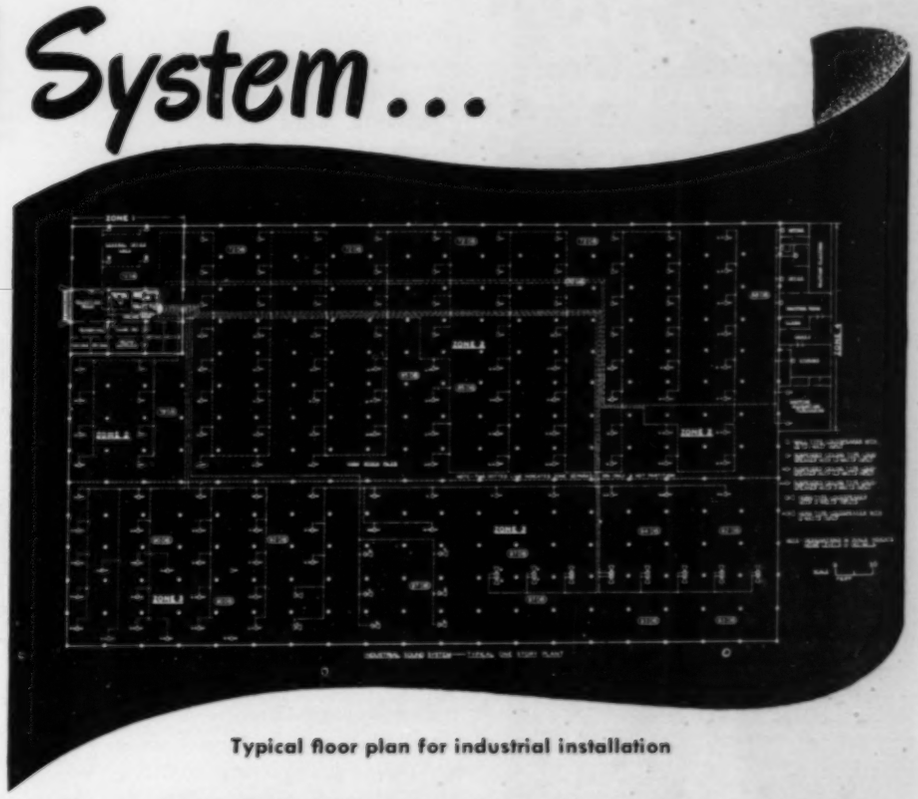
OIL FIELD, HEAVY INDUSTRIAL, MUNICIPAL & CHEMICAL PROCESS COOLING EQUIPMENT
Engine jacket water coolers • Oil coolers • Steam and natural gas condensers • Natural gas coolers • Evaporative coolers and condensers • "VAD" Vertical air discharge cooling and condensing units.

AERONAUTICAL PRODUCTS
Oil coolers • Supercharger intercoolers • Radiators • Heat exchangers • Valves • Regenerators

YOUNG RADIATOR CO.
General Offices: Dept. 519-C, Racine, Wisconsin
Plants at Racine, Wisconsin, and Mattoon, Illinois
Sales and Engineering Offices in All Principal Cities

It's Easy to Plan a Sound System...





Typical floor plan for industrial installation

—with time-saving RCA Engineering Service

You gain a good reputation when your clients are enthusiastic with the results of your plans and specifications. You generate this kind of client enthusiasm when you recommend a sound system that is engineered specifically to the individual requirements of your client's organization.

This benefit is yours when you use the services of RCA Sound Engineers to assist you when working out the details of a modern sound system. You also save time and save money.

There is no ready-made "package" system that perfectly suits the noise level, type of buildings, needs of various types of plant and office layouts. Working with RCA's practical help for architects, you provide clients with a sound system that gives them the most for their money. An RCA Sound System utilizes the latest developments in sound system engineering practice for high-quality reproduction of voice and music.

No matter what size or type of job you have on your drawing boards, RCA will help you. Put your sound system problems up to RCA. No obligation, of course.

, , ,

Contact your nearest RCA Sound System distributor, or write: RCA Sound Products, Department 3C, RCA, Camden, New Jersey.

---- - Let RCA Help You Plan and Engineer Sound Systems For -------

OFFICE BUILDINGS	HOTELS
SCHOOLS	INSTITUTIONS
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HOSPITALS	TRANSPORTATION TERMINALS
INDUSTRIAL BUILDINGS	RECREATIONAL CENTERS

WAREHOUSES AND GARAGES

DO YOU HAVE A COPY?

The Architect's Manual of Engineered Sound Systems. The most authoritative work book and reference manual published on sound systems. Typical plans, and specifications for all types of buildings. 288 pages. Price $5.00 ($5.50 foreign).

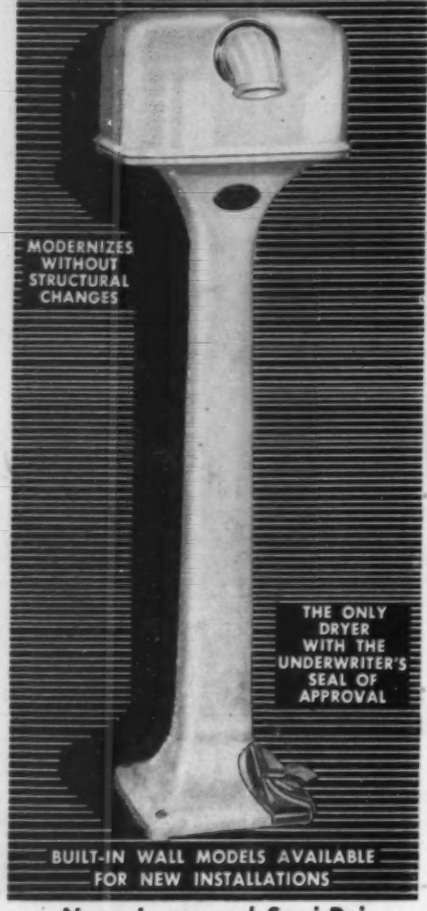
SOUND PRODUCTS

RADIO CORPORATION of AMERICA

ENGINEERING PRODUCTS DEPARTMENT, CAMDEN, N.J.

In Canada: RCA VICTOR Company Limited, Montreal

ANNOUNCING...
The New, FASTER DRYING
Sani-Dri
HAND AND FACE DRYER


MODERNIZES WITHOUT STRUCTURAL CHANGES
THE ONLY DRYER WITH THE UNDERWRITER'S SEAL OF APPROVAL
BUILT-IN WALL MODELS AVAILABLE FOR NEW INSTALLATIONS

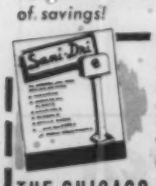
New, Improved Sani-Dri

CUTS DRYING TIME 25% OR MORE!

Now . . . a new, improved heating element makes Sani-Dri the fastest drying machine of its kind! This modern, sanitary method of hand and face drying now takes *25% less time!* For new installations or modernizations of old washrooms, there's nothing like the new faster-drying Sani-Dri. Write for the latest facts today!

SAVES UP TO 85% OF WASHROOM COSTS!

You eliminate towels completely with the Sani-Dri. No unsanitary litter . . . no fire hazard . . . no paper clogged soil pipes — Sani-Dri provides completely *automatic* drying service 24 hours a day, year after year with little or no maintenance! Sani-Dri *pays for itself out of savings!*



GET THE LATEST FACTS!
New brochure 1082 shows both built-in wall and pedestal models of new faster-drying Sani-Dri electric hand and face dryer. Write today!
Distributors in Principal Cities

THE CHICAGO HARDWARE FOUNDRY CO.
"Dependable Since 1897"
8349 Commonwealth Avenue
NORTH CHICAGO, ILL.

(*Continued from page 194*)

conversation at normal voice level can be conducted between the person paged and the originator of the call.

Formerly, when replies were made through a two-way trumpet reproducer, the trumpet would pick up all shop noises so that the reply was frequently unintelligible.

The trumpet reproducer is constructed of heavy gauge, spun aluminum with gray wrinkle finish; it is 10½ in. in diameter and in overall length, and is equipped with an adjustable mounting bracket. The compact, die-cast staff station is 6 in. wide, 6½ in. high and 3½ in. deep, and is finished to match the trumpet reproducer. Executone, Inc., 415 Lexington Ave., New York 17, N. Y.

ELECTRIC RADIATOR

Electrically heated through the medium of hermetically sealed oil is a new pressed steel radiator unit called *Hurseal.*

The thermostatically controlled radiator is filled with a special grade, low expansion oil, and is permanently sealed. An electrical element, welded into the radiator or wall panel types, heats the oil and is said to provide a quick temperature rise to a surface temperature of 160° F.

Twelve models of various heights and designs are available in a range of colors with glossy finish. Acrow, Inc., 155 Washington St., Newark, N. J.

PLASTIC WALL COVERING

A plastic coating for finishing concrete, brick or block walls is said to provide both color and texture in a single spraying operation.

The coating is described as resisting scuffing, grease and oil, water, sunlight and exposure to weather.

The product consists of a liquid binder of synthetic rubber and a powder composed of plastic materials and asbestos fibers. These components are mixed on the site with water, which serves as the vehicle for spraying.

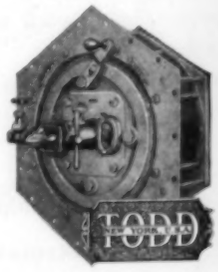
Scotch-Top is made in white and in 12 different shades of green, red and yellow.

The coating is now available in the Chicago area and will be offered nationally, according to the manufacturer, when skilled applicator crews have been trained. Minnesota Mining and Mfg. Co., 900 Fauquier St., St. Paul, Minn.

Investigate!!!
THE
AVAILABILITY
AND
ECONOMY
OF
FUEL OIL
AND
TODD BURNERS
FOR YOUR
BOILER PLANT!

You'll find that for replacement of obsolete equipment or for new installations, Todd Burners will effect savings in fuel and maintenance costs. Skilled Todd specialists, modern Todd facilities—backed by 35 years of engineering experience—guarantee you economical burning of liquid and gaseous fuels. See your local Todd dealer now!

Oil Burners
Gas Burners
Combination Oil and Gas Burners



COMBUSTION EQUIPMENT DIVISION
TODD SHIPYARDS CORPORATION
81-16 45th Ave., Elmhurst, Queens, N. Y.

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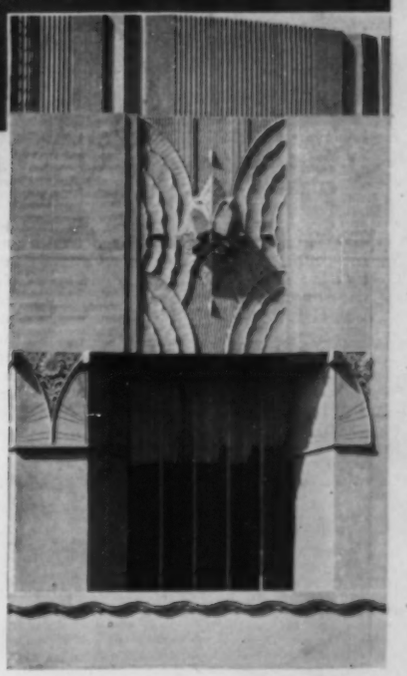
Architectural Concrete

theater resists severe weathering

SPOKANE'S FOX THEATER was built in 1931. For 18 years it has been exposed to frequent freezing and thawing cycles and extremes of temperature that range from -30°F. to 108°F. Yet this severe weathering has had no effect on the architectural concrete. Arrises remain as sharp as when the forms were stripped.

Architectural concrete buildings like this that are designed and constructed to resist any weather conditions maintain their original good appearance and remain structurally sound indefinitely. Such durability is the result of applying the well-defined principles and procedures of quality concrete construction.

The beauty and durability of architectural concrete also make it ideal for apartments, hospitals, schools, factories, office and commercial buildings. Having long life and requiring little or no maintenance, architectural concrete renders *low-annual-cost* service, the true measure of construction economy. That's important to owners, investors and public officials.



Illustrations above show a general view of the Fox Theater, Spokane, with (inset) a close-up of large ornamental bas-relief butterfly panel cast integrally with the wall against a plaster mold built into the forms. R. C. Reamer and Frank Wynkoop were the architects. Alloway & George were the contractors.

PORTLAND CEMENT ASSOCIATION
33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS
A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work